CHAPTER 7

HELICOPTER AIRCREW SURVIVAL AND ARMOR PROTECTIVE ASSEMBLY A/P22P-15

Section 7-1. Description

7-1. GENERAL.

7-2. During the Vietnam War it became apparent that helicopter aircrewmembers needed body armor protection while flying over hostile territory. However, this requirement could not be satisfied at that time because available T-65 body armor was not compatible with the aircrewmember's survival vest/life preserver combination. This led to the development of the Helicopter Aircrew Survival and Armor Protective Assembly, a fully integrated survival vest, flotation assembly, and hard and soft small arms protective body armor. The Helicopter Aircrew Survival and Armor Protective Assembly can provide protection, both front and back, for the vital organs of the aircrewmember's torso against armor-piercing rounds up to .30 caliber. This armor is also fully compatible with the CMU-30/P22P-15 survival vest and the LPU-21/P life preserver. The Helicopter Aircrew Survival and Armor Protective Assembly has been designed to provide one-hand, two-operation quick disconnect of the hard armor plates. The soft armor assembly can be worn in combination with the other A/P22P-15 components to provide small arms and fragmentation protection. Specifically, the soft armor provides protection Type IIIA, which is a National Institute of Justice (NIJ) standard of protection against small arms such as .44 Magnum and 9mm. The hard armor provides Type IV protection, or up to .30 caliber armor-piercing bullets.

7-3. CONFIGURATION.

7-4. Components required to assemble the A/P22P-15 are the CMU-30/P22P-15 survival vest, PRU-60/P22P-15 or PRU-60A/P22P-15 small arms protective soft body armor, PRU-61/P22P-15 or PRU-61A/P22P-15 small arms protective hard body armor, and LPU-21/P life preserver.

1. The survival vest comes with all the accompanying pockets for survival gear. However, the individual survival items must be obtained separately. Repair and fabrication of any part of the entire ensemble is limited to those materials and procedures found in this chapter. However, if the soft armor ballistic inserts (black pouches) or the hard armor ballistic inserts are damaged, they must be returned to the manufacturer or discarded, as appropriate. Both the PRU-60/P22P-15 small arms protective soft body armor and the PRU-61/P22P-15 small arms protective hard body armor, but not the CMU-30/P22P-15 survival vest, can be obtained, in all sizes, thru the GSA schedule from the manufacturer, Protective Materials Company, Tel: 305-820-4414.

2. The small arms protective soft body armor is available as a complete assembly consisting of front, back and side panels and the H-harness. If desired, the front soft body armor subassembly, which consists of the front soft armor and its casing, may also be requisitioned. The H-harness allows the wearer to wear only the front soft armor without the supporting back soft armor and its accompanying straps. The side soft armor panels may also be requisitioned separately. If replacement of casing or H-harness is necessary, either can be fabricated at I-level maintenance.

3. The small arms protective hard body armor is also available as a complete assembly consisting of the front hard armor plate and its accompanying beaded pull-handle, and the back hard armor plate including the connecting quick release and back armor retaining straps. Replacements for the front or back hard armor plates may be obtained through supply channels. However, if replacement of the beaded pull-handle, any of the straps or the front and back hard armor insert encasement are required, they must be fabricated. Authorized fabrication of required replacements shall be performed by I-level maintenance using materials and instructions in this chapter.

7-5. Sections 7-2 and 7-3 address the CMU-30/P22P-15 survival vest and the body armor, respectively. See NAVAIR 13-1-6.1-2, for LPU-21/P maintenance procedures.

Section 7-2. CMU-30/P22P-15 Survival Vest

7-6. GENERAL.

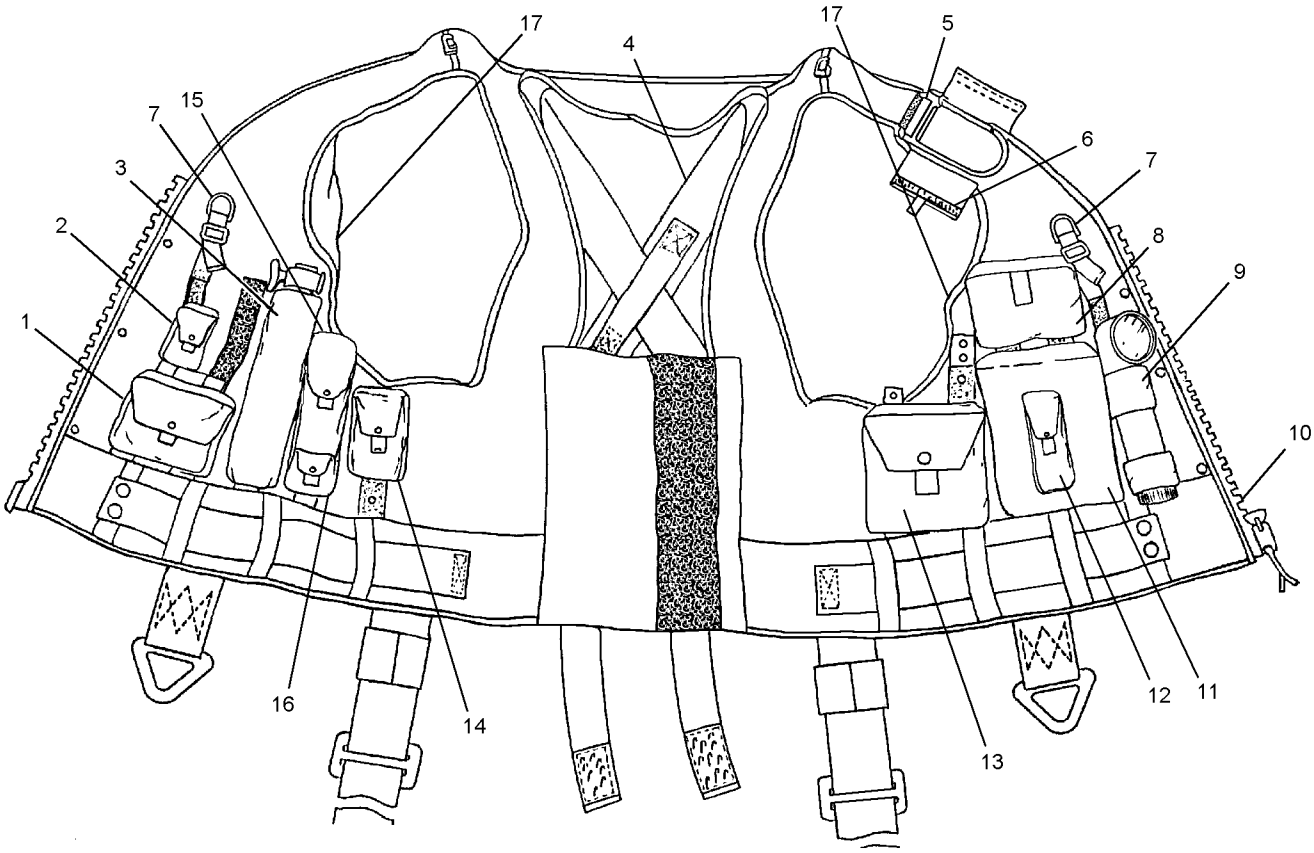
7-7. The CMU-30/P22P-15 survival vest (figure 7-1) is designed specifically for helicopter aircrews and is compatible with the LPU-21/P life preserver and soft and hard armor (PRU-60/P22P-15 or PRU-60A/P22P-15 and PRU-61/P22P-15 or PRU-61A/P22P-15). The survival equipment pockets are modular so location of survival items may be changed, but to ensure safety of flight and configuration control, changes to pocket configuration must be approved by the type commander.

NOTE

When PRU-61/P22P-15 or PRU-61A/P22P-15 small arms protective hard body armor is not in use, store in accordance with paragraph 7-79.

7-8. CONFIGURATION.

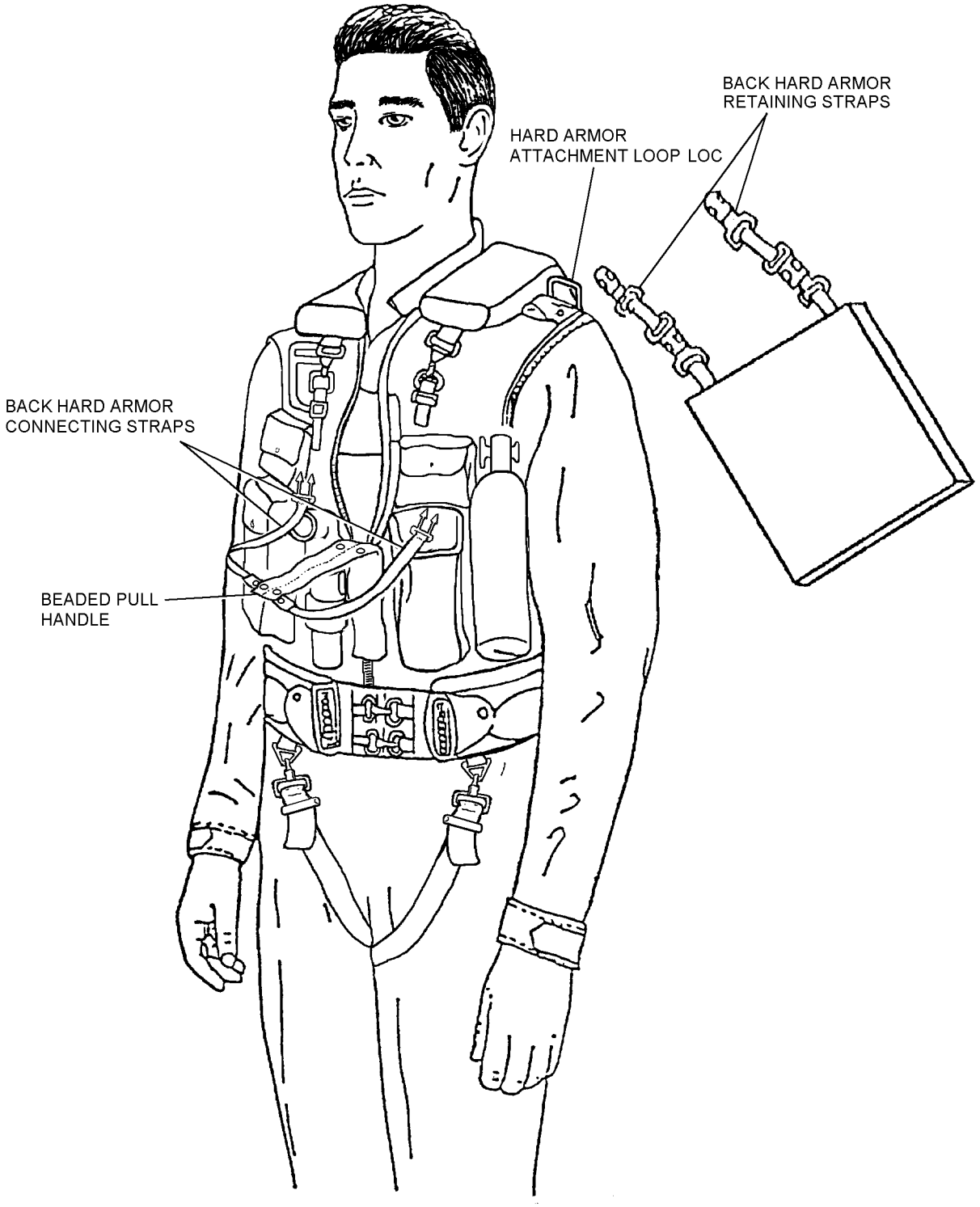
7-9. The CMU-30/P22P-15 survival vest is constructed of fire retardant nylon mesh fabric with woven nomex pockets that are attached to the vest with directional snap fasteners and hook-and-pile tape. The vest has a slide fastener on the front. When the hard armor is worn in front, the slide fastener is engaged for no more than two inches and the armor-release beaded pull handle is used as an alternate front closure. See Section 7-3 or NAVAIR 13-1-6.7-4 if using PRU-60A/P22P-15 or PRU-61A/P22P-15.



1 SRU-31/D MEDICAL KIT
2 STROBE LIGHT
3 HEED
4 HOISTING HARNESS
5 GATED D-RING
6 D-RING COVER
7 COLLAR LOBE ATTACHMENT
8 PENGUN FLARE SIGNAL KIT
9 FLASHLIGHT
10 SLIDE FASTENER
11 RADIO POCKET
12 CHEMLITE
13 SEA DYE MARKER
14 DAY/NIGHT FLARE
15 SURVIVAL KNIFE
16 MIRROR, WHISTLE, COMPASS
17 WATER AND OPTIONAL POCKET (INSIDE VEST - NOT SHOWN)

7-1

Figure 7-1. CMU-30/P22P-15 Survival Vest



7-2

Figure 7-2. Survival Vest with Hard Ballistic Armor Plates

7-10. APPLICATION.

7-11. The CMU-30/P22P-15 is designed for use by helicopter aircrews in conjunction with the aircrew armor assembly when operating in hostile territory. The CMU-30/P22P-15 may also be worn with only the soft armor or as a survival vest without any armor.

7-12. FITTING.

7-13. The CMU-30/P22P-15 vest is worn with the aircrew armor assembly, standard military personal equipment, and the LPU-21/P life preserver. The vest is available in two sizes, medium (32 – 40 inches), and large (40 – 48 inches).

7-14. RIGGING AND PACKING.

7-15. Refer to NAVAIR 13-1-6.7-1, for survival items to be stowed in the CMU-30/P22P-15 Survival and Armor Protective Assembly. Table 7-1 lists additional survival items recommended for the CMU-30/P22P-15. Rig and pack the CMU-30/P22P-15 survival vest as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cord, Nylon, Type I (with core strands removed) or Type IA (coreless)	MIL-C-5040 NIIN 00-240-2154 NIIN 00-292-9920 or 00-531-2813
As Required	Webbing, Textile, Nylon, Type II, Yellow, 1-Inch	MIL-W-4088 NIIN 00-262-1643
As Required	Rubber Bands	—

Table 7-1. Additional Survival Items

Item	P/N	Qty
Compass	Silva 27 or equivalent	1
Battery, Radio, PRC-90	303654A (CAGE 90303) NIIN 00-838-0706	1

Table 7-1. Additional Survival Items (Cont)

Item	P/N	Qty
Battery, Strobe Light SDU-5/E	BA-1574/U (CAGE 90303) NIIN 00-073-8939	1
Spark Lite	SL3 (CAGE IMP49) NIIN 01-223-0061	1
Lights, Chemical, Four-Inch	95270-16 (CAGE 83289) NIIN 00-106-7478	2
-or-		
High Intensity	95270-52 (CAGE 83289) NIIN 01-074-4229	2
Flashlight, Right Angle	MIL-F-3747 M7-991/U NIIN 00-264-8261	1
Batteries, Type D Alkaline	MIL-B-49030/1 (CAGE 81349) NIIN 00-835-7210	2

WARNING

Additional items may be added to the CMU-30/P22P-15 at the discretion of the aircrewmember. However, no items shall be added which will cause the total weight of the added survival items to exceed five pounds. Each additional item shall be secured to its CMU-30/P22P-15 pocket with a 48-inch length of nylon cord. All items shall be stowed in a manner which will maintain an equal weight balance of the vest (see OPNAVINST 3710.7).

NOTE

If weapon is to be carried, use the leather shoulder holster P/N 7791527.

1. Ensure that all survival equipment has been inspected in accordance with the applicable sections of NAVAIR 13-1-6.5.

2. Lay out vest and survival items on a clean table. Ensure modular pockets are securely attached (all snaps are engaged) to the vest in the proper locations (see figure 7-1).

NOTE

Refer to Glossary for instructions for tying bowline knot.

Unless otherwise specified, all items shall be secured to the vest using a bowline knot and a 48-inch length of nylon cord. Sear cut ends of the cord to prevent fraying. Secure the remaining line with a lightweight rubber band and stow in vest pocket with survival items.

If the SDU-39/N Distress Strobe Light is used, the nylon cord shall be passed through the hole below the ON/OFF switch of the SDU-39/N and through the loop formed by the folded end of the lanyard. Refer to paragraph 7-50 for fabrication and installation of the SDU-39/N lanyard.

3. (SDU-5/E Only). Sear cut a 12-inch length of 1-inch webbing (MIL-W-4088) and feed one end through loop on SDU-5/E distress marker light and draw ends even. Sew webbing together by stitching a single row 1/8-inch from edge around all edges and as close as possible to the light's loop. Double stitch across webbing next to loop. Cross boxstitch open end.

a. Tie one end of a 48-inch length of nylon cord to the SDU-5/E strobe light and the other end to the two grommets of the pocket in which the light is stowed.

NOTE

Ensure plastic switch protective cap is removed from actuation switch on distress strobe light (SDU-5/E).

b. Install light in pocket with dome end down.

4. Tie a 48-inch length of nylon cord to PRC-90 radio and secure opposite end to grommets in radio stowage pocket using a bowline knot.

a. Ensure volume control of radio is set at maximum output.

b. Loop the antenna of radio and secure it to radio with a rubber band. Insert radio into pocket and close slide fastener.

5. Sear cut a 60-inch length of nylon cord. Using a bowline knot, tie one end of cord to attachment eyelet of MK79 MOD 0 or Personal Distress Signal Kit replacement. Tie the other end of line to grommets in proper pocket using bowline knot.

WARNING

Refer to NAVSEA SW-050-050-AB-NNA-010 for safety precautions, handling and storage procedures.

a. Inspect signal kit in accordance with NAVAIR 13-1-6.5.

b. Stow signal projector in vest pocket ensuring projector is empty of flares and knurled knob is in cocked position.

c. Accordion-fold excess length of line, secure it with a lightweight rubber band, and stow with projector.

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6. Stow flares for distress signal projector in plastic bandolier which is secured to CMU-30/P22P-15 as follows:

a. Replace 48-inch length of cord attached to bandolier with a 12-inch length of searcut nylon cord.

b. Secure cord to hole in one end of bandolier using a bowline knot and tie other end to grommets of pengun flare signal kit pocket.

7. Stow MK-13 MOD 0 (or MK-124 MOD 0) Smoke and Illumination Signal Flare as follows:

a. Searcut an 80-inch length of nylon cord and tie an overhand knot in one end.

b. Wrap end of cord two turns around one end of signal flare and tie with a surgeon's knot. Turns of cord shall overlap with all knots positioned snugly against each other.

c. Route cord to opposite end of signal flare and tie in same manner. Cord between ties shall be drawn tight.

d. Secure free end of cord to grommet in day/night flare pocket with a bowline knot.

8. Secure all additional items with 48-inch lengths nylon cord and stow in vest in a manner to ensure equal balance of total weight of vest and survival items.

9. Fit and adjust the leather shoulder holster in accordance with paragraph 6-24B, steps 1 through 4.

7-15A. INSTALLING THE LPA-21/P ONTO THE CMU-30/P22P-15 SURVIVAL VEST. To install the LPU-21 Life Preserver to the CMU-30/P22P-15, proceed as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Insulation Sleeving, Electrical	MIL-I-23053/5 NIIN 00-815-1300

1. Reeve waist belt of CMU-30/P22P-15 through waist loops of LPA-21 life preserver and waist loops of CMU-30/P22P-15.

2. Snap the survival vest waist belt snap fasteners to secure the LPU-21 to the survival vest.

3. Cut two pieces of the electrical insulation sleeving, (heat shrink) Part No. MIL-I-23053/5, 2.75 inches in length.

4. Slide one piece of the heat shrink cut in step 3 over one of the D-rings of the survival vest attachment strap and connect the life preserver snap hook to the D-ring.

5. Slide the heat shrink up and over the life preserver snaphook, ensure the heat shrink butts against the shank (base) of the snap hook.

CAUTION

Ensure heat from the heat gun is not directed to the bladder of the life preserver. Testing has indicated direct heat from the heat gun will not harm the bladder, but it shall be avoided.

6. Apply heat from the heat gun until the heat shrink is snug around the snap hook. The heat shrink should cover the spring clip opening of the snap hook completely.

7. Repeat steps 4 through 6 for the snap hook on the opposite side.

8. Inspect both snap hooks modified in steps 4 through 7. To ensure the heat shrink is snug around the snap hooks and covers the snap hook spring clip opening completely.

9. Snap retaining straps of LPU-21 collar lobes around mesh material of CMU-30/P22P-15 just below armor handle strap loop locs.

10. Don survival vest and life preserver as one assembly.

7-16. MODIFICATIONS.

7-17. Modification of vest to accommodate helicopter aircrew A/P23P-14A(V) or A/P22P-14(V)1 CBR respirator assemblies is authorized. See paragraph 7-28. In addition, ACC 599 HEED Quick Disconnect must be fabricated and attached to HEED Pocket of vest. Repairs and replacements to maintain serviceability of the vest are listed in table 7-2. Repairs for the vest other than those listed may be performed at the discretion of the repairing maintenance activity.

7-18. The CMU-30/P22P-15 Survival Equipment Vest (P/N 3241AS301) used by aircrews of USN/USMC helicopter, E-2C, and C-2A aircraft shall be modified to accommodate the SRU-40/P Helicopter Aircrew Breathing Device (HABD) in accordance with ACC 640. Upon incorporation of ACC 640 the modified CMU-30/P22P-15 Survival Vest shall be identified by Part Number 3241AS302-101.

a. The currently installed SRU-36/P, Helicopter Emergency Egress Device (P/N 1586AS101-1) shall be removed and returned to supply in F condition. The SRU-36/P Pocket Assembly (P/N 3241AS307-1) shall be removed and retained in accordance with local Wing directive.

7-19. MAINTENANCE.

7-20. Repairs or other required maintenance actions shall be performed at the lowest technically capable maintenance level possible. All maintenance actions and inspections shall be documented in accordance with OPNAVINST 4790.2 Series.

7-21. ACCEPTANCE/SPECIAL INSPECTION. An Acceptance/Special Inspection shall be performed at organizational level or above upon issue prior to placing the CMU-30/P22P-15 in service and every 90 days thereafter.

NOTE

Survival items shall be inspected in accordance with NAVAIR 13-1-6.5, Rescue and Survival Equipment.

1. Visually inspect survival items.

2. Ensure pockets are securely fastened to vest.

3. Inspect fabric for cuts, tears, and abrasions.

4. Inspect stitching for security.

5. Inspect hook and pile fasteners for secure attachment and closure.

6. Inspect to ensure required survival items are present and securely attached.

7. Inspect slide fastener for damage, security, and ease of operation. Inspect the thong pull tabs to ensure they are present and securely attached.

8. Verify overall condition of survival vest.

9. Ensure that inspection is completed and that any discrepancies found were corrected.

10. If cleaning is necessary, refer to paragraph 7-22.

11. If cleaning is not necessary, repack vest in accordance with paragraph 7-14.

12. Document inspection in accordance with OPNAVINST 4790.2 Series.

7-22. CLEANING. Clean CMU-30/P22P-15 vest as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Detergent, General Purpose	Commercial

1. Mix a proper strength solution of detergent following detergent manufacturer's recommendations.

CAUTION

Ensure all survival items are removed from vest.

2. Immerse vest in solution and allow to soak for five minutes. Agitate gently for two minutes. Drain; do not wring.

3. Rinse vest in cool, fresh water until all traces of detergent are gone.

CAUTION

Do not use dryer. Do not hang in direct sunlight.

4. Hang vest on wooden or plastic hanger in a well-ventilated area until dry. Do not iron or press.

5. Repack vest in accordance with paragraph 7-14.

7-23. REPAIRS AND REPLACEMENTS.

7-24. Repairs and replacement shall be performed at the lowest level of technically capable maintenance possible. Table 7-2 lists the common repairs and replacements to maintain serviceability.

Table 7-2. Repair/Replacement/Fabrication

Description of Repair or Replacement	Paragraph Number
Replacement of loose or broken stitching	Note 1
Repair of small holes or tears	Note 1
Replacement of hook and pile fastener tapes	Note 2
Replacement of snap fasteners	Note 3
Repair/replacement of back adjustment straps	7-25
Repair/replacement of LPU collar lobe attachment	7-26
Repair/replacement of survival vest securing (waist) belt assembly	7-27
Repair/replacement of the shoulder rings (looplocs)	7-29
Repair/replacement of the hoisting harness and D-ring cover	7-30
Repair/replacement of back flaps	7-31
Repair/replacement of soft and hard armor casing assembly	7-70
Fabrication/repair of H-Harness	7-75
Fabrication/repair of Armor Beaded Pull Handle	7-76
Fabrication/repair of the Quick Disconnect Strap	7-77
Fabrication/repair of Back Hard Armor Retaining Strap	7-78

Notes:
1. Unless otherwise specified all stitching shall be in accordance with ASTM-D-6193, Type 301 lockstitch, 7 to 10 stitches per inch with minimum 1/2-inch backstitch.
2. Broken or loose stitching shall be repaired using thread conforming to MIL-T-83193, Size E, sage green (NIIN 00-130-6245) or V-T-295 Size E, sage green (NIIN 00-616-0079).
3. Worn or damaged hook and pile fastener tape shall be replaced using same type and size fastener tape. Replacement fastener tape shall be stitched in place 1/8 inch from edges using thread conforming to V-T-295, Size E, sage green (NIIN 00-616-0079).
4. Broken or missing snap fastening devices may be repaired using the same type of snap fastener. Refer to the applicable paragraph to determine the correct choice. Remove broken snap, if applicable, and attach new stud and eyelet in original position. Snap fasteners on either side of the slide fastener should be reinforced with a 14 X 1 inch strip of MIL-T-5038 Type III nylon tape sewn on the backside.

7-25. REPAIR/REPLACEMENT OF SURVIVAL VEST BACK ADJUSTMENT STRAPS. Replace the survival vest adjustment straps or loop slide as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Nylon, OD Type IV 1-Inch Wide	MIL-T-5038 NIIN 00-261-8579
As Required	Fastener, Tape Pile, Sage Green, 1-Inch Wide	MIL-F-21840 NIIN 00-405-2263
As Required	Fastener, Tape Hook, Sage Green, 1-Inch Wide	MIL-F-21840 NIIN 00-405-2266
As Required	Thread, Nylon, Size E, Sage Green	V-T-295 NIIN 00-204-3884
3	Loop Slide	MS51940-9S NIIN 00-664-6395

NOTE

Unless otherwise specified all stitching shall be in accordance with ASTM-D-6193, Type 301 lockstitch, 7 to 10 stitches per inch with minimum 1/2-inch backstitch.

1. Cut thread attaching cover flap to vest and damaged strap. Discard damaged strap. Refer to figure 7-3.

2. Cut 8 1/4-inch length of 1-inch pile tape, MIL-F-21840.

3. Cut 2 1/2-inch length of 1-inch hook tape, MIL-F-21840, and sew 1/8 inch from edge onto back of pile tape at one end using size E thread (sage green).

4. Install new strap to replace strap removed in step one using size E thread 8 to 10 stitches per inch.

5. Refit vest to aircrewmember in accordance with paragraph 7-12.

6. To remove loop slide (right side), cut thread that attaches one-inch wide nylon tape. Remove and discard tape; save loop slide if useable.

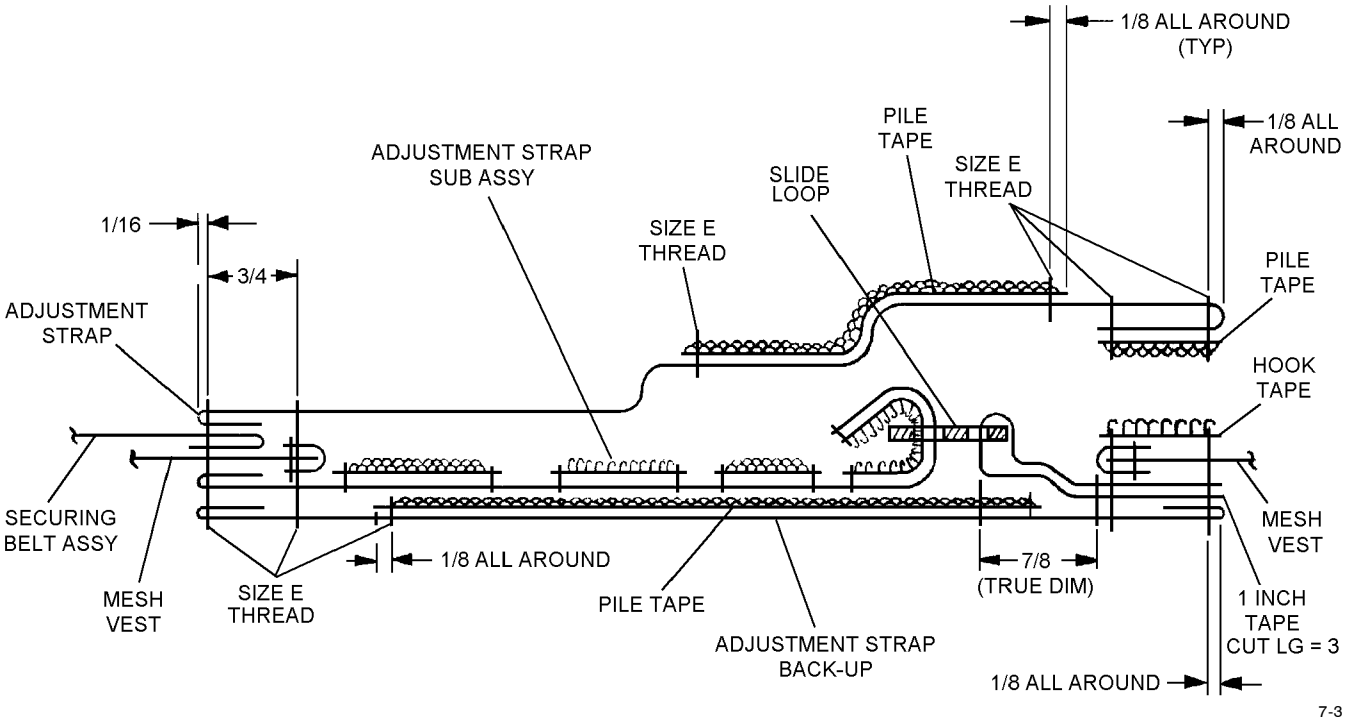


Figure 7-3. Back Adjustment Strap

7. Cut three-inch length of one-inch nylon tape to replace tape removed in step 6. Fold tape through loop slide and sew to inner fold of vest using size E thread, leaving 7/8-inch of nylon tape exposed.

8. Sew hook tape to vest using size E thread, 8 to 10 stitches per inch.

7-26. REPAIR/REPLACEMENT OF LPU COLLAR LOBE ATTACHMENT. Repair/replace LPU collar lobe attachment as follows:

Materials Required

Quantity	Description	Reference Number
20 Inches	Tape, Nylon, OD Type IV, 1-Inch	MIL-T-5038 NIIN 00-261-8579
2	D-Ring, Class 2 Steel, Black	MIL-R-3390 NIIN 00-260-1415
2	Loop Slide, 1-Inch, Black	MS51940-9S NIIN 00-664-6395
As Required	Thread, Nylon, Size E, Sage Green	V-T-295 NIIN 00-204-3884

1. Sear cut 9 3/4-inch length of MIL-T-5038 one-inch nylon tape. Refer to figure 7-4 and install as follows:

a. Fold end over 1 inch and crossbox stitch using size E thread.

b. Sew 1 1/4-inch length of MIL-T-5038 one-inch nylon tape to back of vest opposite collar lobe attachment.

c. Butt bottom edge of 9 3/4-inch tape against top piece of pile tape closest to the slide fastener and sew in place using size E thread.

d. Crossbox stitch end of tape to mesh vest with size E thread.

e. Weave tape though loop slide.

f. Weave tape through D-ring, fold tape back, and reweave through loop slide. Ensure adjustment straps are on the outside for easy adjustment.

2. Repeat procedure for left side of vest, if necessary.

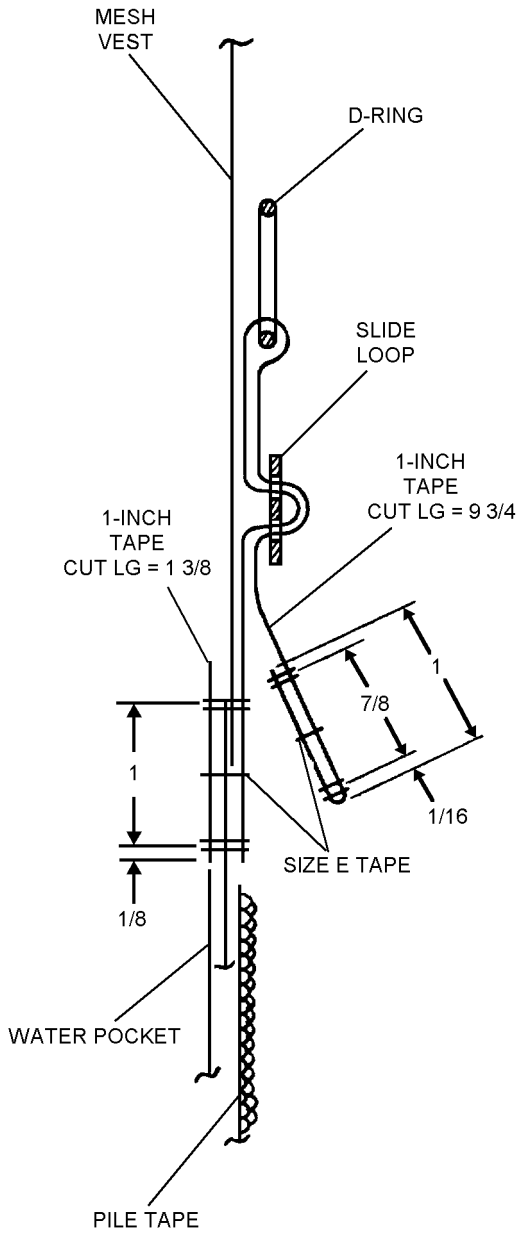


Figure 7-4. Repair/Replacement of Collar Lobe Attachment

7-27. REPAIR/REPLACEMENT OF THE SURVIVAL VEST SECURING (WAIST) BELT ASSEMBLY. Repair/replace securing belt assembly as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Nylon, OD, Type IV, 1-Inch Wide	MIL-T-5038 NIIN 00-261-8579
As Required	Webbing, Nylon, Type VIII, Sage Green, 1 23/32-Inch Wide	MIL-W-4088 NIIN 00-261-8585
4	Fastener, Snap, Unidirectional, Button	MS27983-1 NIIN 00-891-9073
4	Fastener, Snap, Unidirectional, Socket	MS27983-2 NIIN 00-893-6243
4	Fastener, Snap, Unidirectional, Stud	MS27983-3 NIIN 00-276-4908
4	Fastener, Snap, Unidirectional, Eyelet	MS27983-4 NIIN 00-276-4978
As Required	Thread, Nylon, Type II, Class 1, Size E, Sage Green	V-T-295 NIIN 00-204-3884
1	DOT Snapmaster	89-M840 (CAGE 13940)
1 Set	Punches and Dies for Unidirectional Snap Fastener	4305, 4405 4304, 4404 (CAGE 13940)

1. Repair/Replace Tape Loops:

a. Searcut 3-inch length of MIL-T-5038 one-inch nylon tape.

b. Remove damaged tape loop and replace with new 3-inch length of tape using 1/8 by 3/4-inch bartack stitch.

2. Replace Fastener Studs and Eyelets:

a. Remove damaged stud and eyelet.

b. Install new fastener stud, (MS27983-3) and eyelet (MS27983-4) using DOT Snapmaster and unidirectional punch (4304) and die (4404) set.

3. Replace Fastener Socket and Button:

a. Remove damaged socket and button making note of position of directional dot.

b. Replace socket and button using DOT Snapmaster and unidirectional punch (4305) and die (4405) set. Ensure directional dot is in correct position (facing end of webbing).

4. Replace Securing Belt:

a. Remove secured end of belt by cutting thread.

b. Searcut 18-inch length of MIL-W-4088 nylon webbing.

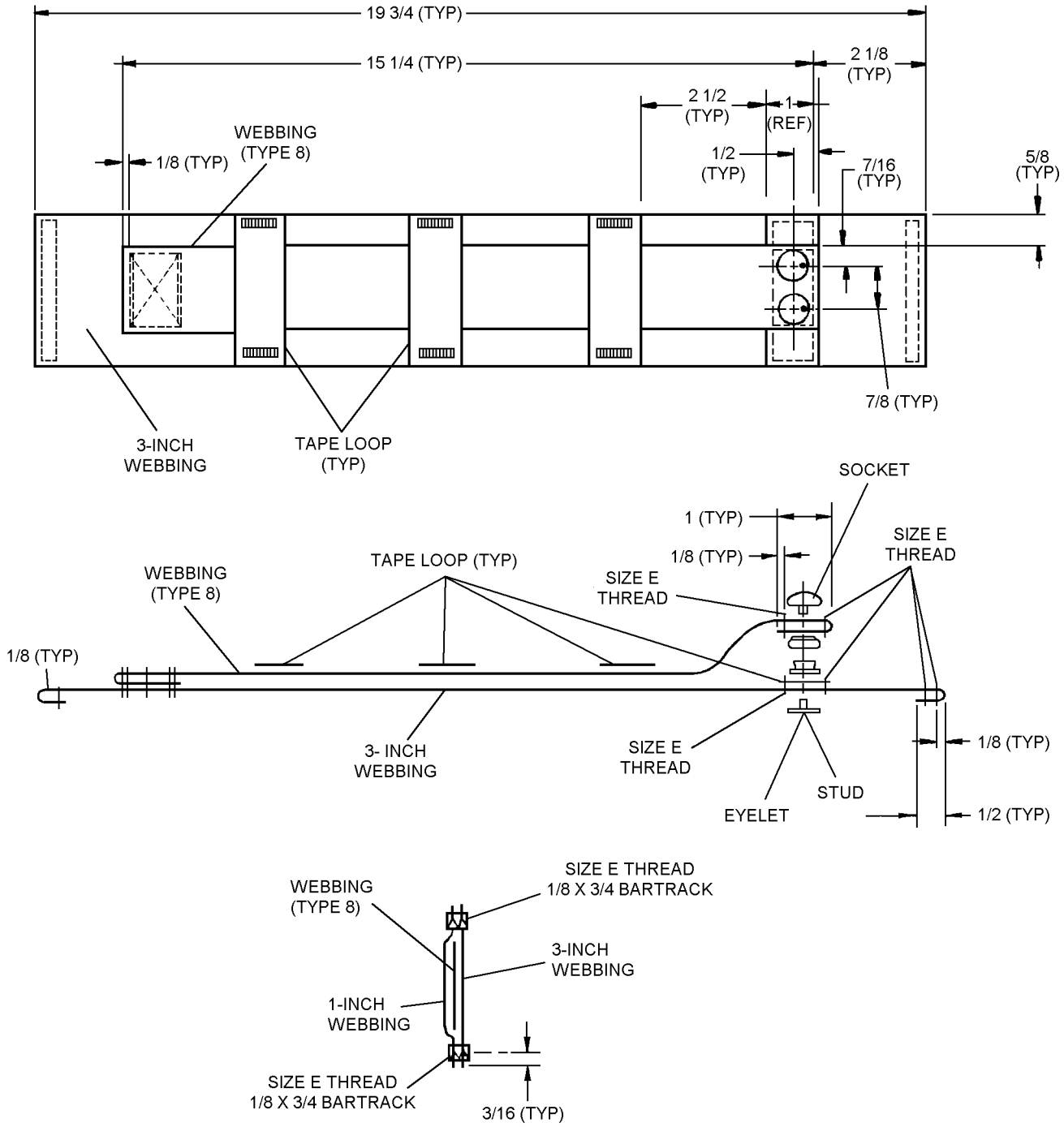
c. Fold one end under 1 1/4 inch and crossbox stitch using size E thread. Install sockets and buttons as described in step 3 above. See figure 7-5 for dimensions and orientation.

d. Snap buttons to sockets, lay flat, and fold end under 1 1/4 inch and crossbox stitch to vest using size E thread. (Remove hoisting harness and/or belt loop on the inside of vest, if necessary).

5. Repeat step 4 for opposite side of vest, as required.

7-28. REPAIR/MODIFICATION TO ACCOMMODATE HELICOPTER AIRCREW A/P23P-14A(V) OR A/P22P-14(V)1 CBR RESPIRATOR ASSEMBLY. Repair/modify the vest to accommodate the CBR respirator assembly as follows:

1. Reposition strobe light pocket to left side of pencil flare pocket on other side of vest to provide space for CBR respirator assembly.



7-5

Figure 7-5. Survival Vest Securing (Waist) Belt Assembly

2. Snap CBR Receiving Bracket Assembly (P/N 1774AS308-1) to CMU-30/P22P-15 using six snaps located above SRU-31/D medical kit pocket. Attach CBR Pusher Fan and Battery Assembly (P/N 1774AS301-1) to CBR receiving bracket.

7-29. REPAIR/REPLACEMENT OF THE SHOULDER RINGS (LOOPLOCS). Replace/repair shoulder rings as follows:

Materials Required

Quantity	Description	Reference Number
2	Looploc	3241AS302-38 (CAGE 30003)
4 Inches	Tape, Nylon, Type III, 3/4-Inch, Sage Green	MIL-T-5038 NIIN 00-176-8083
As Required	Thread, Nylon, Size E, Type 1, Class A, Sage Green	V-T-295 NIIN 00-204-3884

1. Lay vest flat on flat surface with outside of vest facing up with neck at top and waist at bottom.

2. Searcut 3 3/4-inch length of MIL-T-5038 3/4-inch tape.

3. Locate right shoulder seam area where the front and rear mesh sections are sewn together. (Remove hoisting harness, if necessary)

a. Fold the 3 3/4-inch tape into three equal folds (approximately one inch). See figure 7-6 for dimensions and orientation.

b. Position folded tape with 1-inch length perpendicular to and centered on the shoulder seam.

c. Using size E thread, tack down one end of folded tape with 9/16-inch X 3/8-inch crossbox stitch staying 1/16-inch from edge.

d. Position looploc on the tape and tack down open end of folded tape using size E thread and 9/16 X 3/8-inch crossbox stitch staying 1/16-inch from edge.

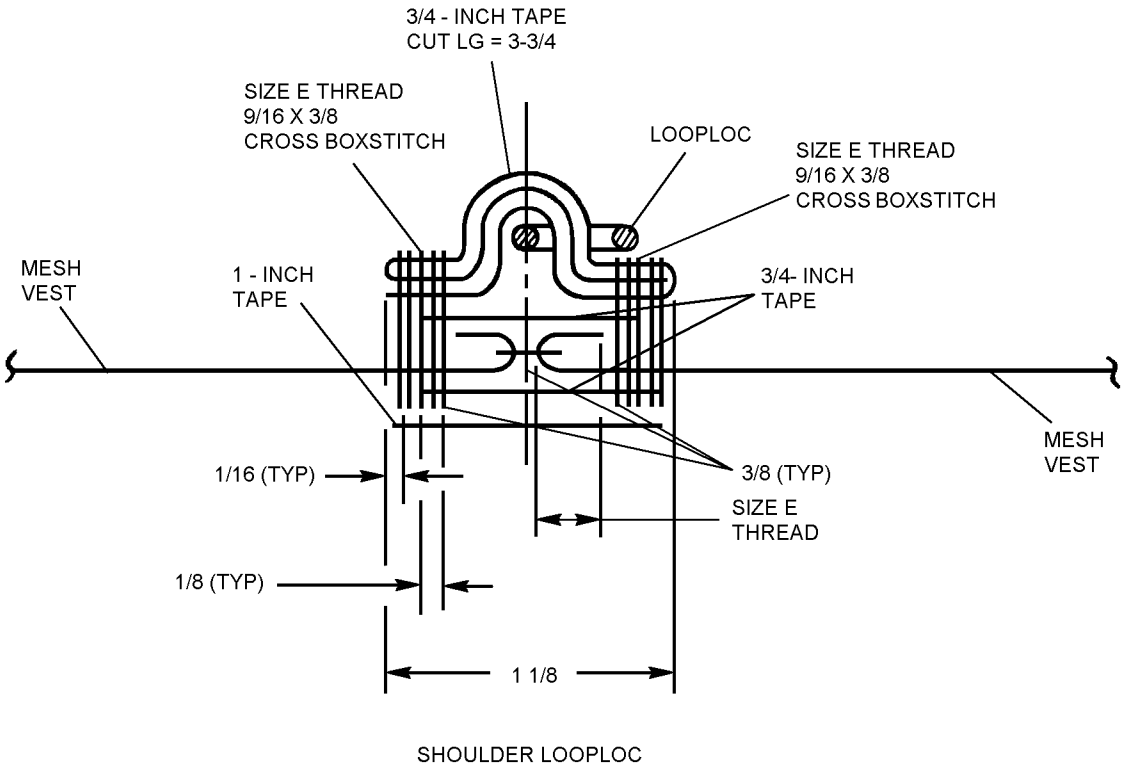
4. Repeat steps 1 through 3d for left side of vest.

7-30. REPAIR/REPLACEMENT OF THE HOISTING HARNESS, INCLUDING REINFORCEMENT FOR THE SAR LIFT HOIST GATED D-RING. Repair/replace the integral harness and/or reinforce the SAR lift hoist gated D-ring as follows:

Materials Required

Quantity	Description	Reference Number
15 ft, 4 in.	Webbing, Nylon, Type XIII, 1 23/32-Inch, Olive Drab, Sage Green	MIL-W-4088 NIIN 00-261-8585 NIIN TBD
As Required	Cloth, Plain Weave, Sage Green	MIL-C-83429 NIIN 01-147-2064
As Required	Tape, Nylon, Type IV, Green, 1-Inch	MIL-T-5038 NIIN 00-261-8579
4 3/4 inches	Webbing, Elastic Cotton, Type I, Class 3, 1 1/2-Inches Wide, Sage Green	MIL-W-5664 NIIN 00-262-1655
2	Snap, Parachute Harness	MS22018 NIIN 00-875-1861
2	Link, Parachute, (Triangle)	MS22020-1 NIIN 00-862-5749
1	SAR Lift Hoist Gated D-Ring	823AS100-1 NIIN 01-147-1283
As Required	Thread, Nylon, Size FF, Sage Green	V-T-295 NIIN 00-204-3789
As Required	Thread, Nylon, Size 6	V-T-295 NIIN 00-559-5211
	Cutter, Nylon Webbing	C-70513 NIIN 00-956-0081

1. The right and left sections of the hoisting harness are similar with the exception of the right harness. The right side harness has the SAR lift-hoist gated D-ring and harness guide tape as part of its assembly (see figure 7-7). Replace, as required, right section of integral harness as follows:



7-6

Figure 7-6. Survival Vest Shoulder Ring (Looploc)

NOTE

When right harness must be removed for repair or replacement, the left harness must also be separated from the vest since it passes through the alignment guide attached to the right harness.

Since gated D-ring may not fit through vest opening, it may be necessary to remove the triangle link from the old harness and cut the stitching securing the gated D-ring in order to remove harness and D-ring from vest.

a. Remove boxstitch of old harness at skirt of vest and remove harness by feeding it through harness holders of vest.

b. Using nylon webbing cutter searcut 103 inches of Type XIII nylon webbing.

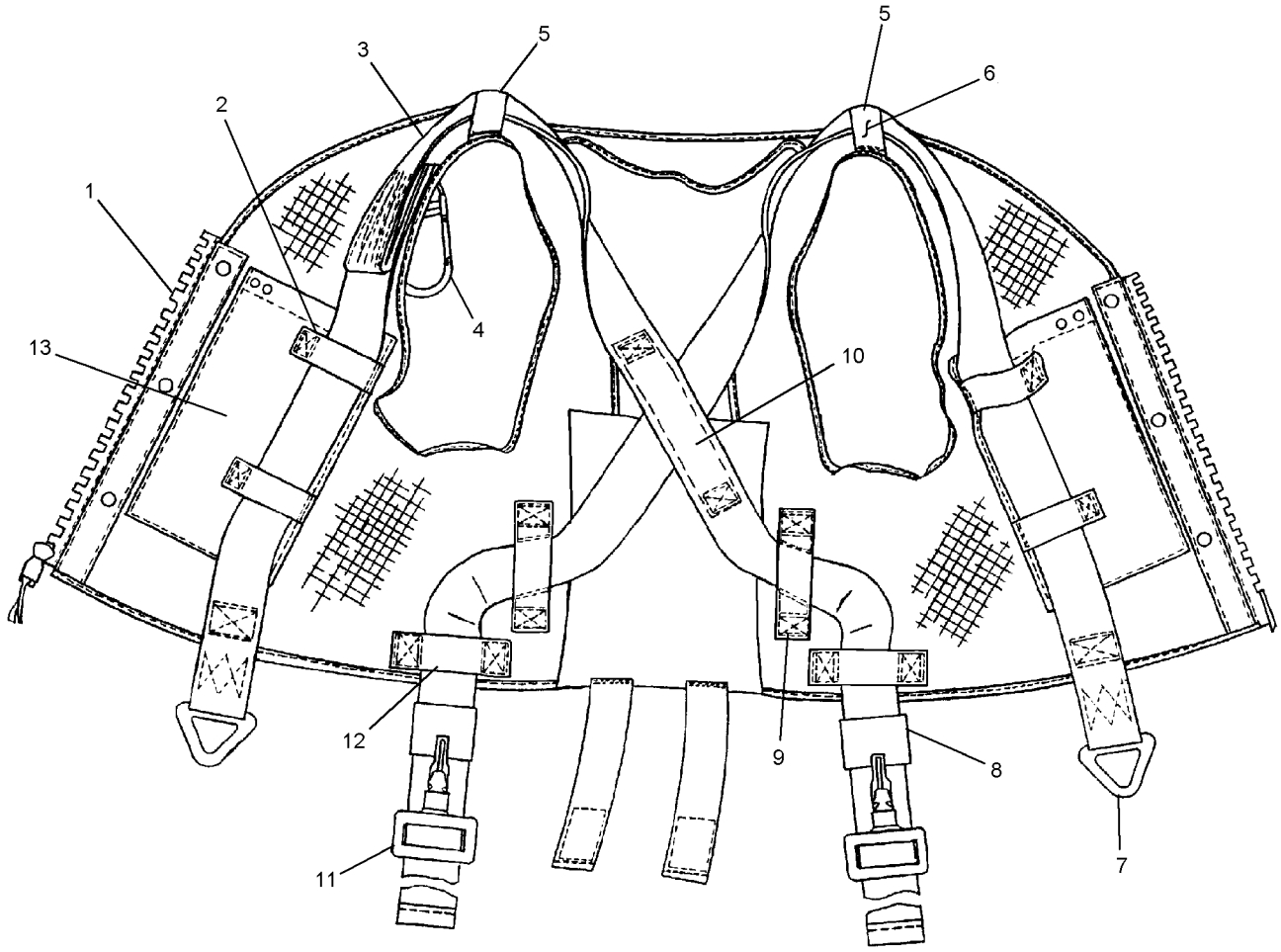
c. Reeve one end through triangle parachute link going from bottom to top and fold back 5 inches (fold-back section on top). Starting one inch from parachute link stitch 3 point with size 6 thread for two inches using four to six stitches per inch.

d. Searcut a 6-inch length of MIL-T-5038 1-inch nylon tape for use as harness guide tape.

e. Position harness with folded portion of triangle-link end up. Measure and mark positions on harness at 23 5/8 ±1/4 inches and 45 5/8 ±1/4 inches from top of triangle parachute link.

f. At 45 5/8 ±1/4 inches, install 6-inch guide tape to center of and aligned with hoisting harness. Using size FF thread, secure each end of aligned tape to the harness with a 5/8 X 3/4-inch cross boxstitch (see figure 7-7).

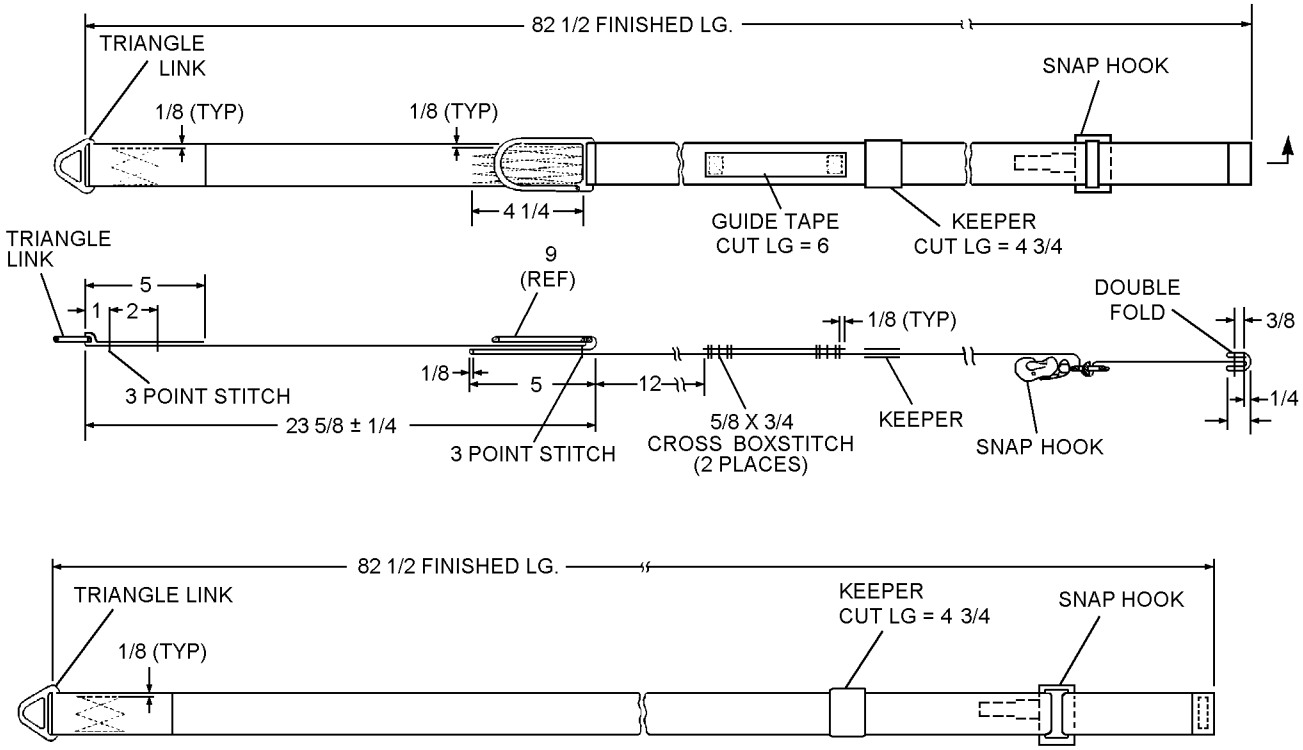
g. Position triangle end of harness on skirt of vest (see figure 7-7) and stitch 1 1/2 X 1 1/4-inch cross boxstitch.



1 SLIDE FASTENER
2 HARNESS HOLDER (4 PLACES)
3 HARNESS
4 D-RING
5 SHOULDER LOOP (2 PLACES)
6 HARNESS HOLDER (2 PLACES)
7 TRIANGLE LINK (2)
8 KEEPER (2)
9 HARNESS ALIGNMENT HOLDER (2 PLACES)
10 GUIDE TAPE
11 SNAPHOOK (2 PLACES)
12 HARNESS HOLDER (2 PLACES)
13 WATER/OPTIONAL ITEM POCKET (2 PLACES)

7-7-1

Figure 7-7. Vest Assembly with Hoisting Harness Installed (Interior) (Sheet 1 of 2)



7-7-2

Figure 7-7. Vest Assembly with Hoisting Harness Installed (Interior) (Sheet 2 of 2)

h. Reeve free end of harness through harness holders and through the vest opening for the gated D-ring to the 23 5/8 ±1/4 inch position marked in step 1e.

i. Slide gated D-ring on harness with gated D-ring on top with opening on slide fastener side and move D-ring to pre-marked position 23 5/8 ±1/4 inches from triangle parachute link (see figure 7-7).

j. Feed harness back through the vest opening and draw D-ring into position at vest opening. Fold harness back under gated D-ring position 5 inches, then fold back and stitch the three layers together 3 1/2 four point using size 6 thread.

k. Reeve harness through remaining holders to left side of vest.

l. Slide elastic webbing keeper over end of harness.

m. Move keeper up and install parachute snaphook onto harness (see figure 7-7 for orientation).

n. Double-fold end of harness and stitch 3/8 X 1 1/2-inch boxstitch.

2. Repair/replace left section of integral harness as follows (see figure 7-7):

a. Remove boxstitch of old harness at skirt of vest and remove harness by feeding it through harness holders of vest.

b. Using nylon webbing cutter, searcut 93 inches of Type XIII nylon webbing.

c. Reeve one end through triangle parachute link going from bottom to top and fold end back 5 inches (fold-back section on top). One inch from parachute link, stitch 3 point with size 6 thread for two inches, four to six stitches per inch.

d. Stitch triangle link end of harness to skirt of vest using 1 1/4 X 1 1/2 inch crossbox stitch (see figure 7-7).

e. Reeve free end of harness through harness holders and tape guide to right side of vest.

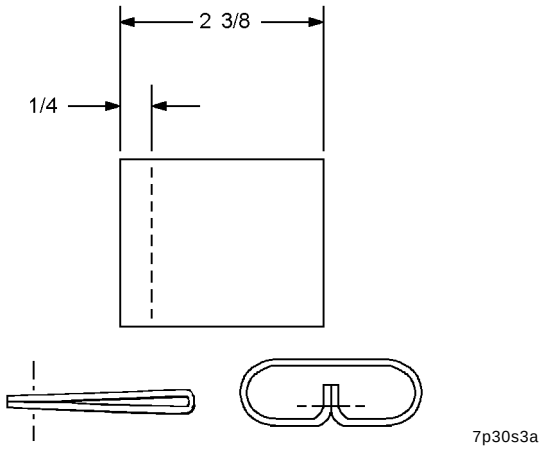
f. Slide elastic webbing keeper on opposite (free end) of harness.

g. Move keeper up and install parachute harness snaphook on harness. See figure 7-7 for orientation.

h. Double fold end of harness and stitch 3/8 X 1 1/2-inch boxstitch.

3. Keeper. Repair/replace either keeper as follows:

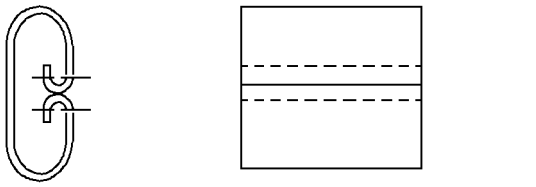
a. Fold double one 4 3/4-inch piece of elastic cotton webbing, MIL-W-5664, with green inside, and single stitch open ends together 1/4 inch from tip using size E thread. Turn inside out.



Step 3a - Para 7-30

b. Fold tips back and single stitch in place.

c. Retain keeper inside-out configuration.



Step 3b - Para 7-30

4. Torso Harness Retaining Straps.

a. The vest has eight hoisting harness holders and two alignment holder straps (figure 7-7), all made with MIL-T- 5038 Type IV, 1-inch sage green tape. If stitching is torn, resew as necessary. If tape is torn, cut stitching and remove torn tape, being careful not to damage the vest. Prepare replacement tape and stitch in place using V-T-295 size E thread.

NOTE

When replacing harness holder alignment tapes, ensure sewn alignment channels of tapes are properly oriented. The high side of the channel on each alignment tape must be aligned toward the opposite shoulder, or center of vest.

5. SAR Lift Hoist D-Ring Vest Opening (figure 7-8). Repair/replace vest opening for gated D-ring as follows:

a. Cut section of MIL-C-83429 cloth two inches by three inches, or as necessary to cover torn mesh.

b. Cut hole in center 1 3/4 inches long by 1/4 inch wide. Stitch the reinforcement patch to mesh vest from the top.

c. Make a 1/8-inch cut in each corner.

d. Fold cloth under 1/8 inch along each side of the cut slot and each end. Sew duck to nylon mesh 1/8 inch from folded edge.

e. Continue stitching cloth to mesh.

6. Repeat procedures of step 5 for opposite side, as necessary.

7. SAR Lift Hoist Gated D-Ring Securing Cover. Repair/replace securing cover for gated D-ring as follows:

a. Cut to length, 4 inches of 1-inch hook tape (MIL-F-21840), 4 inches of 1-inch pile tape (MIL-F-21840), and 2 inches of MIL-T-5038 1-inch nylon tape.

b. Cut two sections of cloth: 5 X 3 1/4 inches and 5 X 2 inches.

c. Measure down 4 1/2 inches from the front center of the 2-inch cut for the SAR Lift Hoist D-Ring and mark.

d. Fold vertical edge and sew 1/4 inch hem on all 4 sides of each piece of cloth.

e. Cut 3-inch length of MIL-T-5038 one-inch nylon tape, fold in half, and stitch 1/8 inch all around.

f. Sew nylon tape onto flap such that edge extends 1 inch beyond flaps 3/32 inch from edge of tape.

g. Take 4-inch length of one-inch hook and pile fastener tape (prepared in step 7a above) and sew on vertical edges of flaps.

7-31. REPAIR/REPLACEMENT OF BACK FLAPS FOR BACK HARD BALLISTIC ARMOR.

Replace/repair vest back flaps for back hard armor plate (figure 7-9), as follows:

Materials Required

Quantity	Description	Reference Number
18 Inches	Webbing, Nylon, Type XV, 2-Inch	MIL-W-4088 NIIN 00-082-2142
4 Inches	Fastener, Tape, Hook, Sage Green, 2-Inch	MIL-F-21840 NIIN 00-450-9837
As Required	Thread, Nylon, Size E, Sage Green	V-T-295 NIIN 00-204-3884

1. Searcut two 9 1/2-inch lengths of Type XV nylon webbing.

a. Fold end of each length back 1/2 inch and doublestitch using size E nylon thread.

2. Cut two 4 1/4-inch lengths of 2-inch hook tape fastener.

a. Sew hook tape fastener sections to the folded side of the end of each nine-inch strap prepared in step 1a, 1/8 inch from end of fold using size E thread.

3. Position vest flat on the table with the inside facing up, the neck at the top, and the waist at the bottom.

a. Position free-end of 9-inch strap on skirt edge of vest, one inch from centerline of back, with hook tape side of strap facing down (toward outside of vest).

b. Fold end of strap down 1/2 inch with folded side down and aligned with hem of vest skirt.

c. Sew to vest using boxstitch set 1/8 inch around.

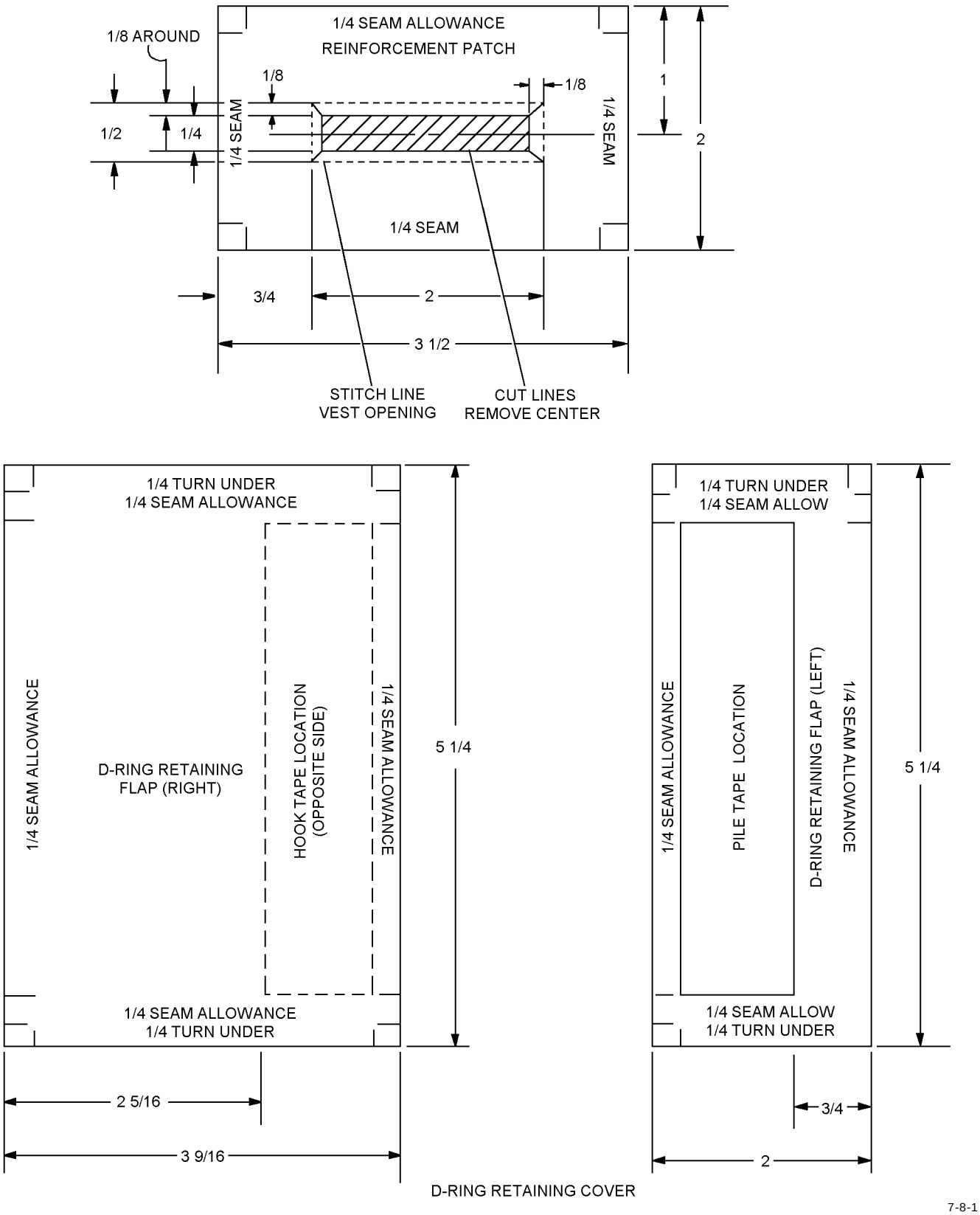
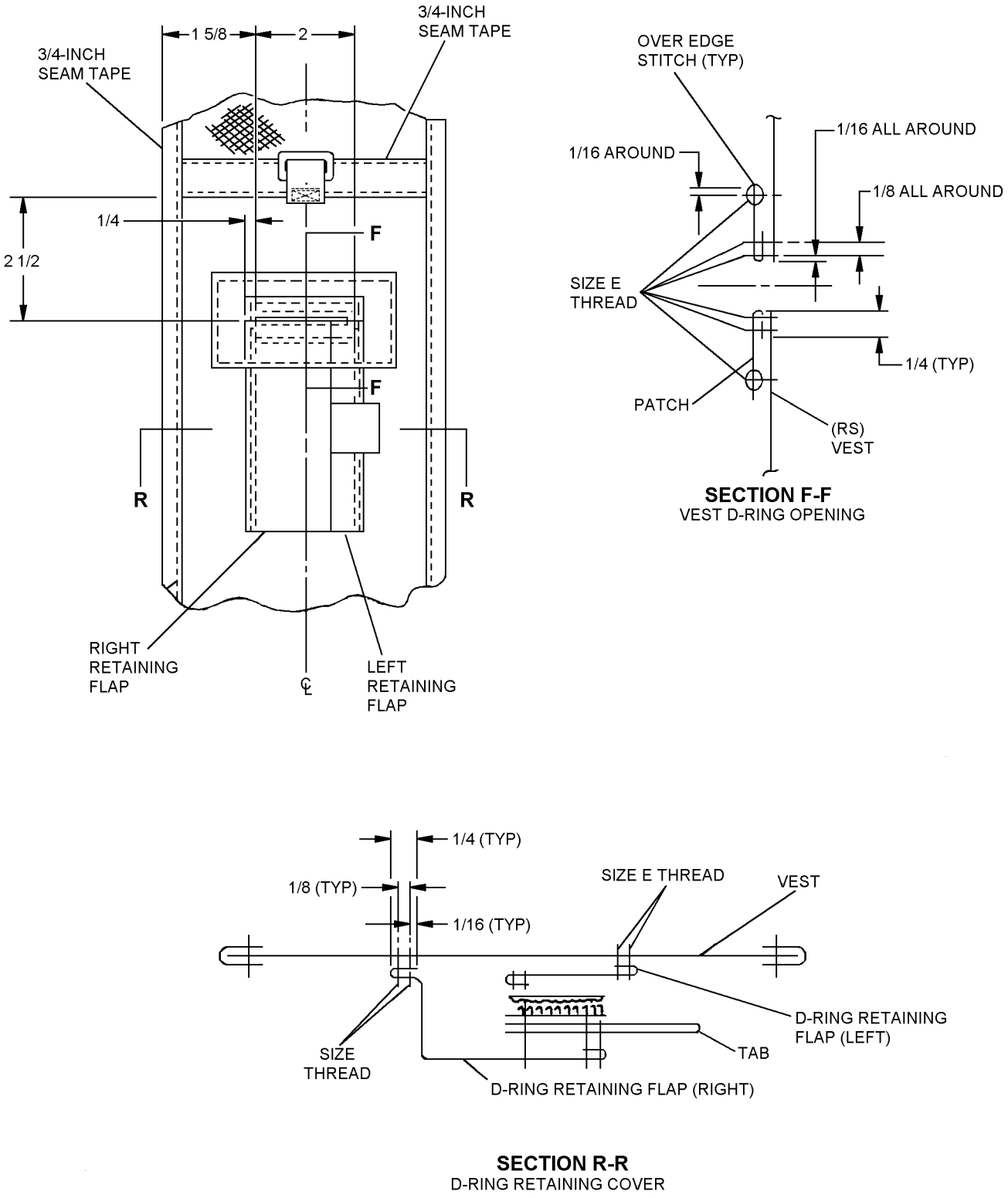
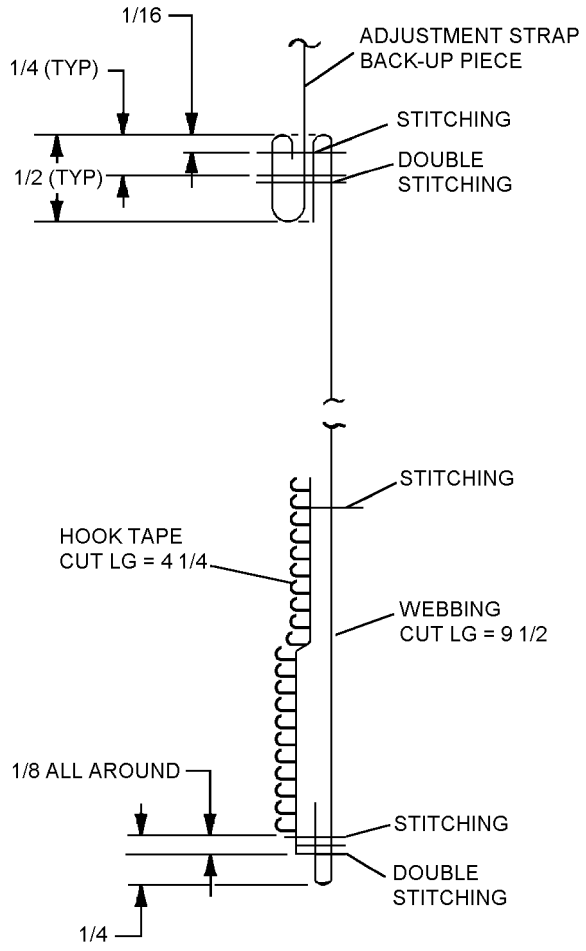


Figure 7-8. SAR Lift Hoist Gated D-Ring Installation (Sheet 1 of 2)



7-8-2

Figure 7-8. SAR Lift Hoist Gated D-Ring Installation (Sheet 2 of 2)



7-9

Figure 7-9. Back Flap for Back Hard Ballistic Armor Insert

d. Place second strap prepared in step 1a one inch from centerline (straps should be installed two inches apart). Install second strap following steps 3a through 3c.

7-32. REPAIR/REPLACEMENT OF POCKETS. If repair of damaged modular pockets cannot be readily accomplished by simple sewing procedures, new pockets must be fabricated. Patterns and sewing instructions can be obtained from NAWCAD (see table 7-3).

Table 7-3. CMU-30/P22P-15 Stowage Pocket Patterns

Stowage Pocket	Pattern Drawing Number
SDU-5E Strobe Light	3241AS314
AN/PRC Radio	3241AS315
SRU-31/P Medical Kit	3241AS313 Rev A
Sea Dye Marker	3241AS310
Day/Night Flare	3241AS309
Pengun Flare Signal Kit	3241AS312
Helicopter Emergency Express Device (HEED)	3241AS307 Rev A
Chemlite	3241AS306
Flashlight Straps	3241AS305
Water/Optional Item	3241AS392 Rev B
Compass, Whistle, and Mirror	3241AS308
Survival Knife	3241AS311
HABD Pocket Assy, SRU-40/P	3241AS318

Note: Drawings may be obtained from NAWCAD, Patuxent River, MD, Code 4.6.3.1.

7-33. FABRICATION OF HELICOPTER AIRCREW BREATHING DEVICE, SRU-40/P (HABD) POCKET ASSEMBLY. The HABD pocket assembly consists of a Bottle Pocket and a CBR Hose Pocket or Non-CBR Hose Pocket to be fabricated as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Nylon Duck	MIL-C-7219, NIIN 01-173-4436
As Required	Fastener Tape, Hook, 1-Inch	MIL-F-21840, NIIN 00-106-5973
As Required	Fastener Tape, Pile, 1-Inch	MIL-F-21840, NIIN 00-405-2263
As Required	Fastener Tape, Hook, 2-Inch	MIL-F-21840, NIIN 00-450-9837
As Required	Fastener Tape, Pile, 2-Inch	MIL-F-21840, NIIN 00-405-2265
As Required	Webbing, Textile, 1-Inch	MIL-W-5664D, NIIN 00-263-3600
As Required	Webbing, Textile, 1-Inch	MIL-T-5038G, NIIN 00-261-8579

Materials Required (Cont)

Quantity	Description	Reference Number
As Required	Tape, Textile, 1-Inch	MIL-T-5038G NIIN 00-753-6144
As Required	Thread, Nylon, Size E, Sage Green	V-T-295 NIIN 00-204-3884
3	Cap, Snap Fastener	MS27983-1 NIIN 00-891-9073
3	Socket, Snap Fastener	MS27983-2 NIIN 00-945-2577
6	Stud, Snap Fastener	MS27983-3 NIIN 00-276-4908
6	Post, Snap Fastener	MS27983-4 NIIN 00-276-4978
3	Grommet, Size 00	MS20230B20 NIIN 00-291-0302
1	Strap, Tie Down	MIL-S-23190 NIIN 00-111-3208
1	Bead, Inflation Handle (Note)	975AS122-1
1	Breathing Device, Helicopter Aircrew, SRU-40/P	1586AS301-1

Note: Obtain bead for inflation handle from Beaded Handle Assy (P/N 975AS121-11, NIIN 01-120-4752, or salvage from LPU-21 or LPU-23 beaded handles.

NOTE

Sear all cut edges of nylon webbing and tape to prevent fraying (recommend use of Cutter, Nylon Webbing, NIIN 00-956-0081). Do not form sharp edges. Unless otherwise specified all stitching shall be in accordance with ASTM-D-6193, Type 301 lockstitch, 7 to 10 stitches per inch with minimum 1/2-inch backstitch. All stitching shall be 1/8 inch from edge unless otherwise specified. All binding tape shall be sewn using two rows of stitching 1/8 inch apart. Use china marker or equivalent for all markings.

7-34. Fabrication of Bottle Pocket Panel. Refer to figure 7-10 and proceed as follows:

1. Cut a piece of nylon duck cloth 4 3/4 X 8 inches and bind the 8-inch edges with 1-inch binding tape.

2. Cut two 4 3/4-inch lengths of 2-inch hook tape.

3. Orient duck cloth so 8-inch edges are at top and bottom.

4. Measure and mark bottom edge 1 3/4 inches from lower left-hand corner.

5. Measure and mark top edge 1 3/4 inches from top left-hand corner.

6. Draw a vertical line connecting the two 1 3/4-inch positions.

7. Place the two pieces of hook tape with 4 3/4-inch edges side by side along the right side of the vertical line.

8. Sew all edges of both pieces of hook tape in place.

9. Measuring from the top left-hand corner mark portions at 2 3/4 and 4 3/4 inches along top edge.

10. Measuring from the lower left-hand corner mark positions at 2 3/4 and 4 3/4 inches along bottom edge.

11. Draw vertical lines connecting the 2 3/4-inch portions and the 4 3/4-inch positions.

12. On the vertical line between the 2 3/4-inch positions, measuring from the top, mark portions at 1/2 inch, 2 1/2 inches, and 4 1/2 inches.

13. On the vertical line between the 4 3/4-inch positions, measuring from the top, mark positions at 1/4 inch, 2 1/4 inches, and 4 1/4 inches.

14. Punch holes at marked positions.

15. Set posts and studs in the holes with studs showing on the hook tape side.

16. From the top edge, between the two lengths of installed hook tape, measure down 3/8 inch and mark.

17. Punch a hole at the mark and set a grommet in the hole.

18. Measuring from the top left-hand corner mark a position on the top edge at 1/2 inch.

19. Measuring from the bottom left-hand corner mark a position on the bottom edge at 1/2 inch.

20. Draw a vertical connecting the two 1/2-inch positions.

21. Fold the bottle panel in half so the 4 3/4-inch seared edges meet and the hook tape is showing.

22. Stagger the placement of the top and bottom edges to be side by side rather than stacked to reduce the number of layers.

23. Sew a row of stitches along the line connecting the 1/2-inch marks.

7-35. Fabrication of the HABD Hose Pocket Panel For Non-CBR Configuration. Refer to figure 7-11 and proceed as follows:

1. Cut a piece of nylon duck cloth measuring 10 X 6 1/2 inches.

2. Orient the cloth so the 6 1/2-inch edges are at the top and bottom.

3. Measure and mark the right-hand edge 1 1/4 inches down from the top right-hand corner.

4. Draw a cutline from the top left-hand corner to the 1 1/4 inch mark on the right-hand edge and cut the fabric along the line.

5. Double fold the top and bottom edges 3/8 inch to the back side of the fabric.

6. Stitch a hemline 1/8 inch from the outer edge and another 1/4 inch from the edge.

7. Single fold the side edges 3/8 inch to the back side of the fabric and sew edges in place 1/8 inch from folded edge.

7-36. Attaching HABD Hose Pocket Panel to Pistol Pocket. Refer to figure 7-11 and proceed as follows:

1. Unfasten the flare pocket on the pistol pocket.

2. On the face of the flare pocket flap, measure and mark the left edge 1 inch down from the top left-hand corner.

3. On the face of the flare pocket flap, measure and mark the right edge 2 1/4 inches down from the top right-hand corner.

4. Position the hose pocket panel on the outside face of the flare pocket flap so the top left-hand corner of the panel is aligned at the 1-inch mark and the top right-hand corner is aligned with the 2 1/4-inch mark.

5. Sew the left and right sides of the panel in place on the flare pocket flap using one row of stitches 1/8 inch from the outer edge and another at 1/4 inch from the outer edge. Reinforce with a minimum backstitch of 1 inch.

7-37. Fabrication of HABD Bottle Neck Strap. Refer to figure 7-10 and proceed as follows:

1. Cut a 12 1/2-inch length of 1-inch webbing. Measure and mark 2 inches from one end.

2. Turn webbing over and, measuring from the same end as in step 1, mark webbing at 4 inches, 6 1/2 inches, and 9 1/2 inches.

3. Cut a 2-inch length of 1-inch pile tape and sew on webbing between the end and the 2-inch mark measured in step 1.

4. Cut a 3-inch length of 1-inch hook tape and sew in place on webbing between 6 1/2 inch and 9 1/2-inch marks measured in step 2.

5. On hook tape end of webbing, slide a bead onto the webbing until it touches the hook tape.

6. Make 3/8-inch double fold, end over end, on end of webbing and sew the fold together using three rows of stitches placed side by side.

7. Fold webbing at the 4-inch mark so hook tape is on the inside and pile tape is outside.

7-38. Setting Grommet of Pistol Pocket. Refer to figure 7-11 and proceed as follows:

1. Unfasten the upper flap of the flare pocket.

2. Turn pocket over and lay it flat so the pile tape is facing up and is at bottom.

3. From the bottom right-hand corner, measure up the right-hand edge and place a mark at 1 1/4 and 1 3/4 inches.

4. Measure and mark grommet locations 1 1/2 inches to the left of the 1 1/4 and 1 3/4 inch marks made in step 3.

5. Punch holes at marked locations and set grommets.

7-39. FABRICATION OF HABD HOSE POCKET FOR CBR CONFIGURATION. The CBR hose pocket consists of two major parts, the back panel and the front panel.

7-40. Fabrication of Back Panel of HABD Hose Pocket. Refer to figure 7-12 and proceed as follows:

1. Measure and cut a piece of nylon duck cloth 16 inches X 4 1/2-inches.

2. Orient the cloth so the 4 1/2-inch edges are at the top and bottom.

3. Measure and mark the right-hand edge of the cloth 1 1/4 inches up from the lower right-hand corner.

4. Measure and cut 6 1/2-inch length of 2-inch pile tape.

a. With pile facing up and the length of the pile tape positioned with its right edge aligned with the right edge of the cloth, place lower right-hand corner of pile tape at the 1 1/4-inch mark made in step 3.

b. Sew the left edge of the pile tape in place.

c. Sew the top and bottom of the pile tape in place to within 3/4 inch of the right edge of the cloth.

5. From the lower left-hand corner of the sewn pile tape, measure up 2 1/2 inches and mark the position on the left edge of the tape.

6. Measure and cut a 5 1/4-inch length of 2-inch pile tape.

a. Place pile tape next to the sewn edge of the pile tape attached in step 4b aligning the top edges and ensuring the lower right-hand corner of the tape is positioned at the 2 1/2-inch mark made in step 5.

b. Sew all edges of the 5 1/4-inch pile tape in place.

c. Measure and mark a line down the center of the 5-1/4-inch length of pile tape.

d. Measuring up the center line from the bottom edge of the 5 1/4-inch tape, mark positions at 3/4 inch, 2 3/4 inches, and 4 3/4 inches.

7. Fold the panel in half leaving the 4 1/2-inch folded edge as the top.

a. Bind the bottom edge of the panel with 1-inch textile tape.

b. Measure and mark the right and left edges 1 inch down from the folded edge of the top.

c. Draw a sew line connecting the 1-inch marks.

d. Sew along the sew line to 3/4 inch from the right edge creating a 1-inch wide channel.

8. Measure and cut a 3-inch length of 1-inch elastic and slide the elastic through the channel created in step 7d.

9. Align the right end of the elastic with the right edge of the channel.

10. Fold back the 6 1/2-inch pile tape installed in steps 4 through 4c and sew the right end of the elastic to the pile tape (through the elastic and the nylon fabric, not through the pile tape).

7-41. Fabrication of Front Panel of HABD Hose Pocket. Refer to figure 7-12 and proceed as follows:

1. Measure and cut a piece of nylon duck cloth 15 inches X 4 1/2 inches.

2. Orient the cloth so the 4 1/2-inch edges are at the top and bottom.

3. Fold the cloth in half so the 4 1/2-inch folded edge is now at the top.

4. Bind the two bottom edges with 1-inch textile tape.

5. Measure and mark right and left edges 1 inch down from the top folded edge.

a. Draw a sew line connecting the 1-inch marks.

b. Sew along the sew line creating a 1-inch channel.

6. Measure and cut a 3-inch length of 1-inch elastic and slide the elastic into the channel.

7. Align one end of the elastic with one of the edges of the channel and sew the edges together.

7-42. Assembly of the HABD Hose Pocket. Refer to figure 7-12 and proceed as follows:

1. Place the back panel on top of the front panel with the pile tape side of the back panel facing up and the sewn elastic edges of each panel aligned, one on top of the other.

2. Align the top edges, top corners, and the left and right edges of the panels.

3. Fold back the 6 1/2-inch pile tape and bind the right edges of the panels together with 1-inch textile tape.

4. Sew right edge of 6 1/2-inch pile tape in place over binding tape.

5. Stretch remaining edge of elastic of back panel through the channel to opposite edge and sew in place.

6. Punch holes through back panel only at 3/4-inch, 2 3/4-inch, and 4 3/4-inch marks made on centerline of pile tape in step 6d, paragraph 7-40.

a. Set caps and sockets in holes so sockets show on the pile tape side.

b. The top two sockets shall have their flat locking edge on top and the lowest socket shall have the flat locking edge toward the bottom (see figure 7-12).

7. Stretch elastic of the front panel through channel to opposite edge and sew remaining edge in place.

8. Bind left edges of panels together using 1-inch textile tape.

7-43. Attachment of HABD Bottle Pocket. Refer to figure 7-10 and proceed as follows:

1. Locate the point between the attachment point of the snap panel to the vest and the bottom edge of the side fastener tape of the general pocket.

2. Draw a line outlining where the right edge of the snap panel lays on the vest.

3. Carefully remove the stitching from the right edge of the snap panel that attaches the panel to the vest.

4. Measure and mark a line 1/2 inch to the left of the snap panel edge line.

5. Place the bottle pocket on the vest with the bottom of the bottle pocket just above the edge of the lower binding on the vest.

6. Align the 4 3/4-inch seared edges with the 1/2-inch line on the vest and the 1/2-inch marks on the pocket with the line from the snap panel edge.

7. Sew the bottle pocket in place with two rows of stitches side by side beginning 1/4 inch from the seared edge of the 4 3/4-inch side. Be careful not to sew beyond the stitching of the bottle pocket.

7-44. Attachment of the HABD Bottle Neck Strap. Refer to figure 7-10 and proceed as follows:

1. Locate the binding on the top edge of the vest.

2. Measure and mark 1 inch to the left of the snap panel edge line at the bottom edge of the binding.

3. Orient the bottle neck strap so the folded edge is on the left edge and the bead is on the right.

4. Place the top corner of the fold at the 1-inch mark.

5. Sew strap in place with two rows of stitches side by side 1-inch from the folded edge.

6. Resew the snap panel onto the vest using two rows of stitches along the original stitch lines.

7-45. Attaching Hook Tape to CBR Pusher Fan Battery Pocket When Using the HABD Bottle. Refer to figure 7-13 and proceed as follows:

1. Measure and cut a 5-inch length of 2-inch hook tape.

2. Locate top left corner of the right side panel of the CBR fan battery pocket.

3. Place the hook tape on the battery pocket aligning the 2-inch edge of the hook tape with the top edge of the pocket and the left edge of the pocket.

4. Sew hook tape in place.

7-46. REMOVAL AND DISPOSITION OF THE HELICOPTER EMERGENCY EGRESS DEVICE, SRU-36/P. Prior to beginning the modification in accordance with ACC 639

the SRU-36/P and its supporting modifications must be removed from the vest as follows:

1. Remove the SRU-36/P from the pistol pocket and return it to supply in F condition.

2. Remove stitching securing the SRU-36/P tether inside the pistol pocket; remove and discard the tether.

3. If vest is configured with the SRU-36/P pocket assembly, P/N 1774AS304-1, unsnap pocket assembly from vest and return it to supply in F condition.

7-47. STOWING THE SRU-40/P HELICOPTER AIRCREW BREATHING DEVICE (HABD) IN RECONFIGURED SURVIVAL VEST. Ensure the SRU-40/P HABD has been inspected in accordance with NAVAIR 13-1-6.5 and proceed as follows:

1. Check to ensure HABD is in RFI condition.

2. Place HABD in prepared pocket and secure bottle neck strap around bottle neck.

3. Route regulator hose down through top of hose pocket in a single U-shaped loop, leaving regulator out.

7-48. Stowing Non-CBR Configuration.

1. Pass a plastic tie wrap through the center of the mouthpiece cover, around the top and through both grommets.

2. Secure tie wrap so it is tight around the cover, but not pinching.

3. Place regulator inside mouthpiece cover and position the mouthpiece so it is between the bottle and the regulator with the regulator purge cover facing toward the entrance slide fastener of the vest.

7-49. Stowing CBR Configuration.

1. Pass plastic tie wrap through the center of the mouthpiece cover, around the narrowest part of the cover and through both grommets.

2. Secure the tie wrap tightly around the cover.

3. Place regulator inside mouthpiece cover and position the mouthpiece so it is between the bottle and the regulator with the regulator purge cover facing toward the entrance slide fastener of the vest.

7-50. FABRICATION AND INSTALLATION OF SDU-39/N DISTRESS STROBE LIGHT LANYARD. The following instructions for fabrication and installation of the SDU-39/N lanyard should be used for all applications of the SDU-39/N strobe light (figure 7-14).

Materials Required

Quantity	Description	Reference Number
As Required	Webbing, Nylon, Yellow	MIL-T-5038, NIIN 00-190-0521
As Required	Thread, Size E, Yellow	V-T-295 NIIN 00-263-9931
	-or-	
As Required	Thread, Green, or OD, or Sage Green	NIIN 00-204-3884 NIIN 01-162-4444 NIIN 00-616-0079
As Required	Cord, Nylon, Type 1	NIIN 00-240-2154
	-or-	
As Required	Cord, Nylon, Type 1A	NIIN 00-292-9920

1. Sear cut a 16 1/2-inch length of nylon webbing.

2. Fold webbing in half aligning ends.

3. Measure and mark 3 3/8 inches from folded end of webbing.

4. Measure 1/2 inch from folded edge and sew 3/4 X 3 ±1/4-inches cross boxstitch in webbing.

5. Sew a 3/4 X 3 1/4 ±1/8-inches cross boxstitch 1/8 inch from seared ends of webbing.

6. Sear a 5/8-inch hole 4 inches from seared end of webbing.

7. Sew boxstitch with 5/8-inch hold made in step 6 centered in boxstitch.

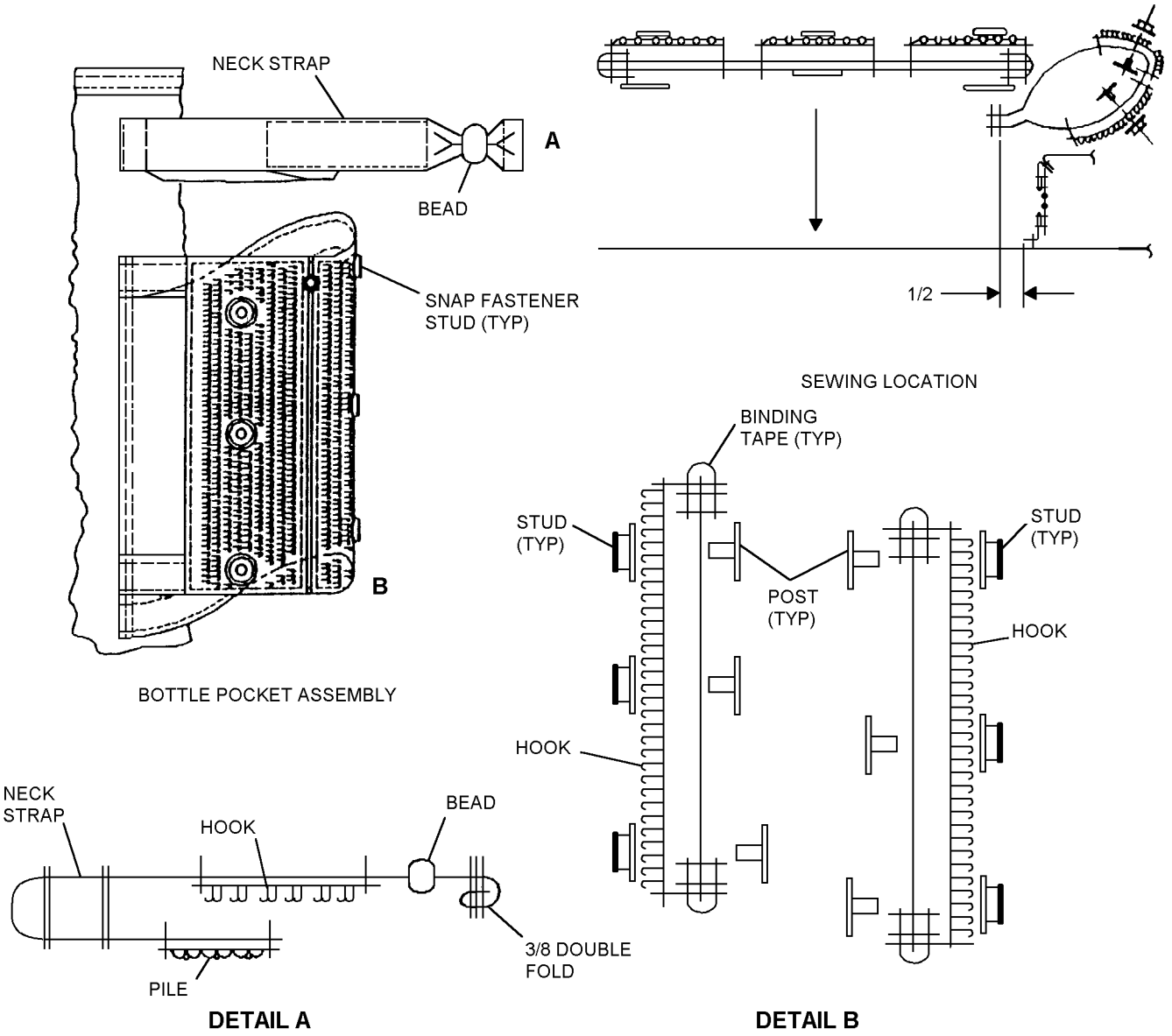
8. Cut and sear both ends of 48-inch length of Type 1 or 1A nylon cord.

9. Route one end of the nylon cord through the hole at the base of the distress light ON/OFF switch and through the loop at the webbing fold.

10. Tie an overhand knot at each end of the cord.

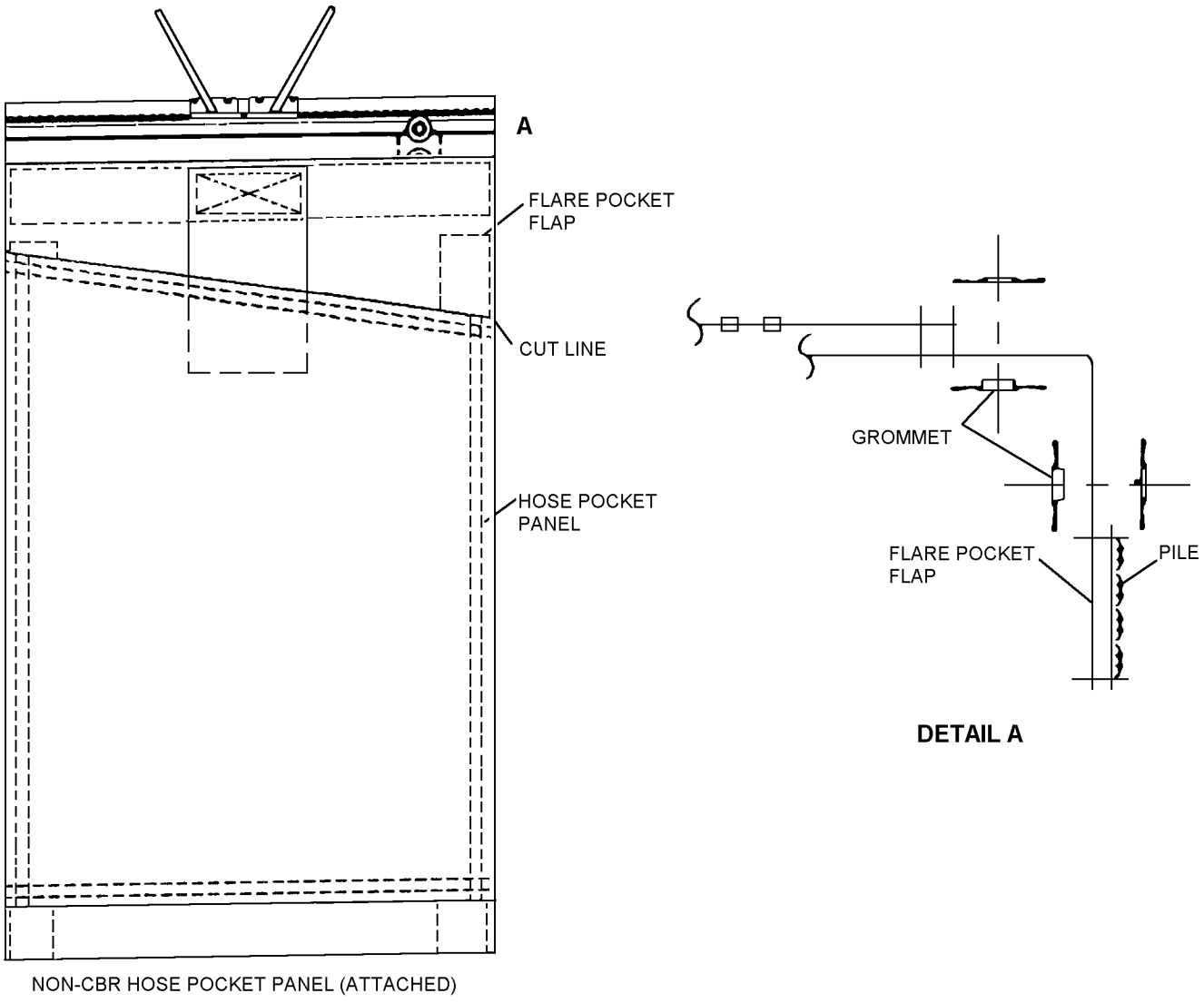
11. Tie a 1/2 to 1-inch bowline knot between the webbing loop and the base of the light.

12. Tie the other end of the cord to the loop inside the stowage pocket and secure using a bowline knot.



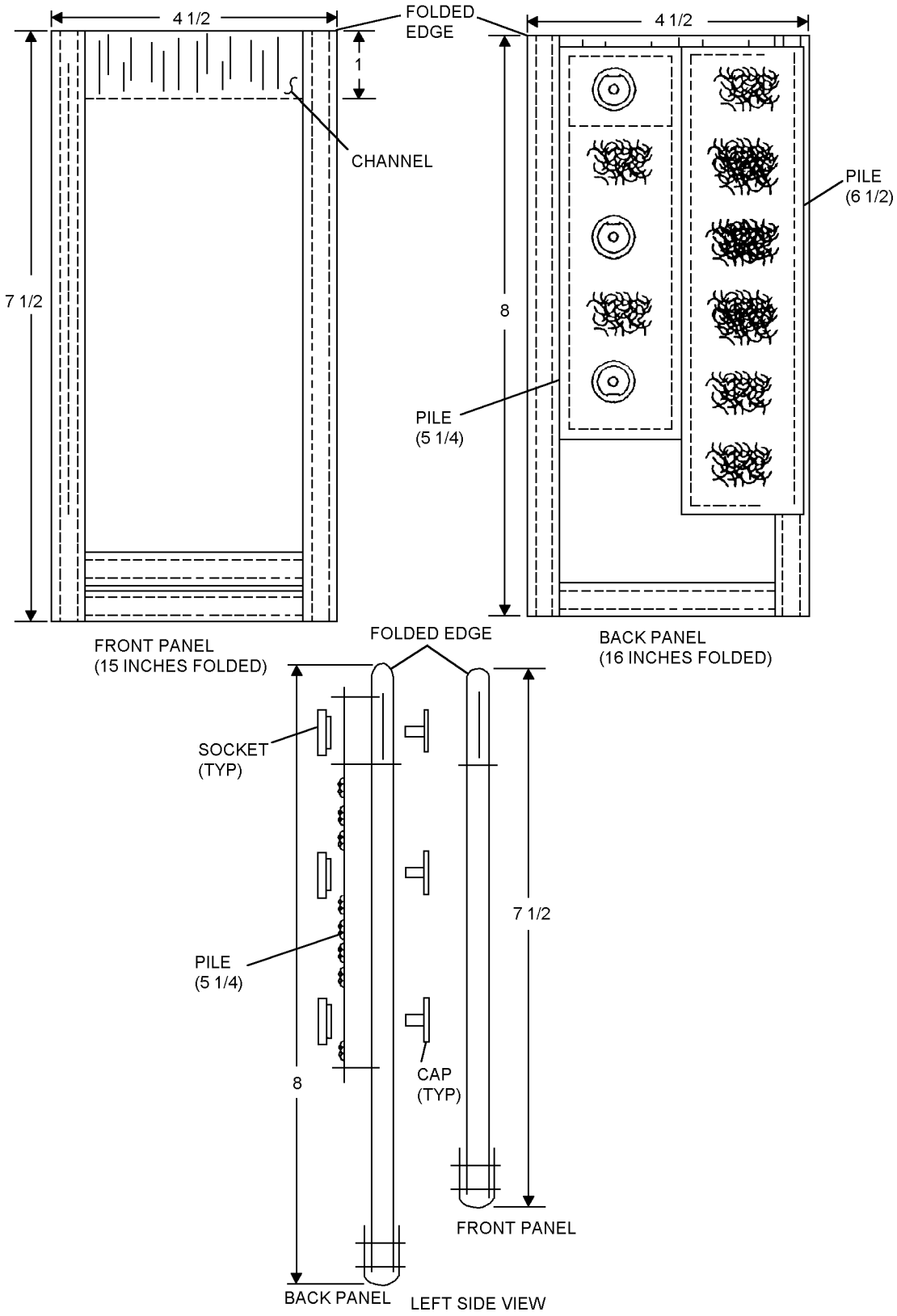
7-10

Figure 7-10. Fabrication of HABD Bottle Pocket Assembly



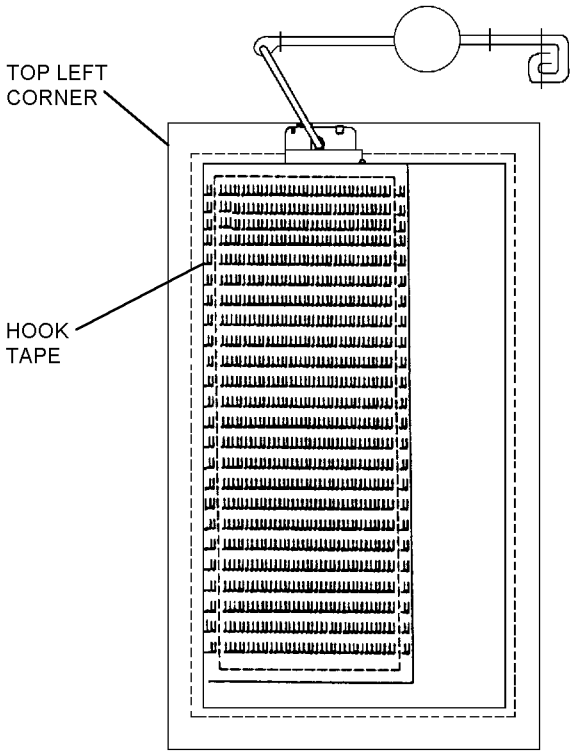
7-11

Figure 7-11. Non-CBR Hose Pocket Assembly



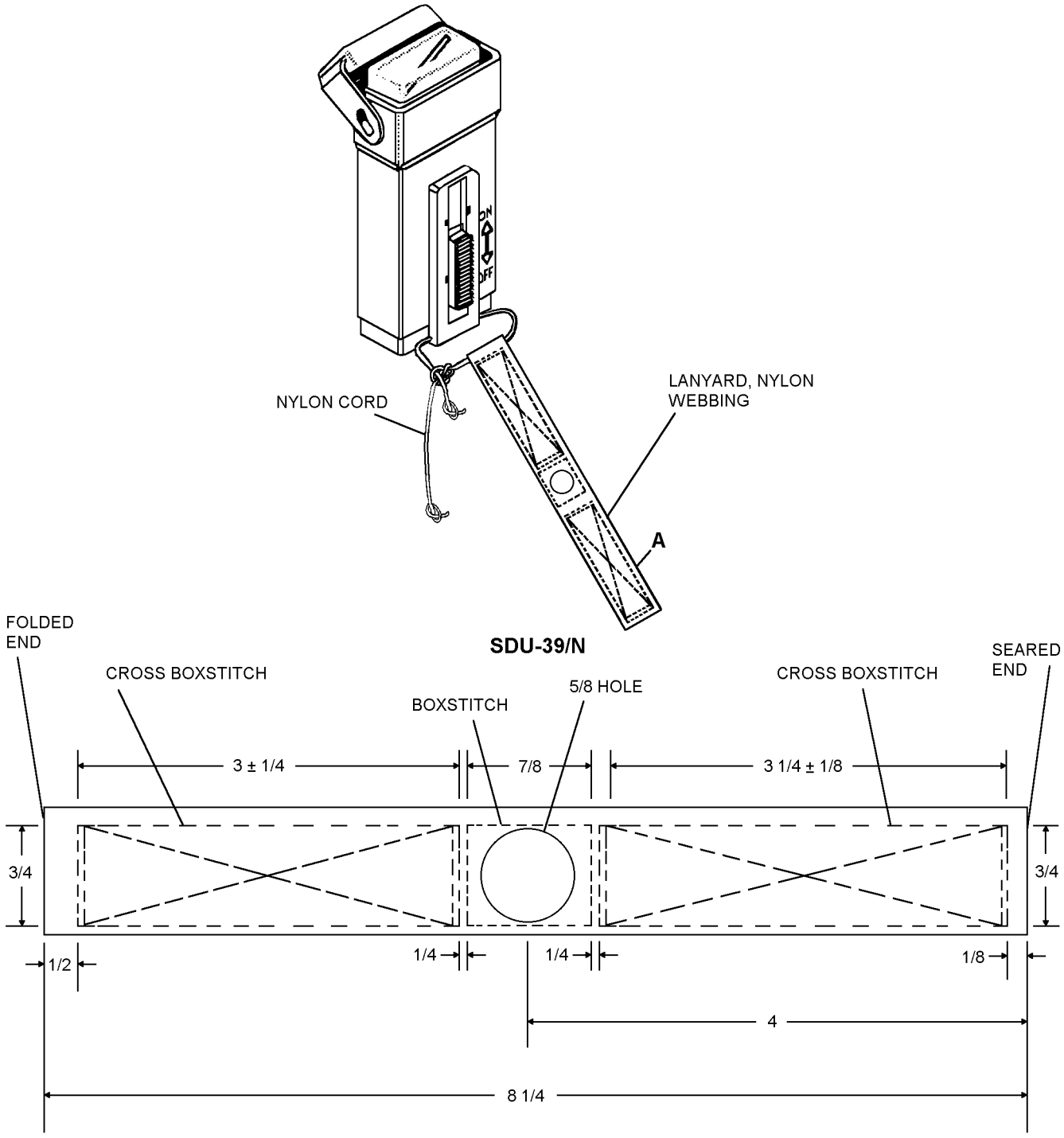
7-12

Figure 7-12. Fabrication of CBR Hose Pocket Assembly



7-13

Figure 7-13. Attachment of Hook Tape to CBR Fan Battery Pocket



7-14

Figure 7-14. Fabrication of SDU-39/N Distress Strobe Light Lanyard

Section 7-3. Small Arms Protective Soft and Hard Body Armor PRU-60/P22P-15 and PRU-61/P22P-15

7-51. GENERAL.

7-52. The Soft Small Arms Protective Body Armor, PRU-60/P22P-15, of the Helicopter Aircrew Survival and Armor Protective Assembly will provide aircrewmembers with protection from small arms such as .44 magnum and 9mm as well as certain ballistic fragments. The Hard Small Arms Protective Body Armor, PRU-61/P22P-15, will provide increased protection for vital organs of the torso against up to .30 caliber armor-piercing bullets. If the CMU-30/P22P-15 vest is not worn, the soft armor may be worn using the front, back and side sections. If only the front soft armor is desired for protection in the helicopters with armored seats, with or without the side sections, the H-harness must be worn for support. Similarly, the front hard armor may be worn without the back hard armor, but the front hard armor depends upon the soft armor casing as a carrier. Therefore, the soft armor must be worn in order to wear the front hard armor. Also the vest must be worn in order to wear both the front and back hard armor because of the necessary quick disconnect and back armor retaining straps.

7-53. CONFIGURATION.

7-54. The complete protective body armor assembly configuration includes the following (figure 7-15 and table 7-4):

1. Soft Armor Casing (SM, MED, L, XL):

   Front (SM, MED, L, XL)
   Back (SM, MED, L, XL)
   Sides (SM, MED, L, XL)

2. Soft Ballistic Inserts:

   Front (SM, MED, L, XL)
   Back (SM, MED, L, XL)
   Sides (SM, MED, L, XL)

3. Hard Armor Encasements:

   Front (SM, MED, L, XL)
   Back (SM, MED, L, XL)

4. Hard Ballistic Armor Inserts:

   Front (SM, MED, L, XL)
   Back (SM, MED, L, XL)

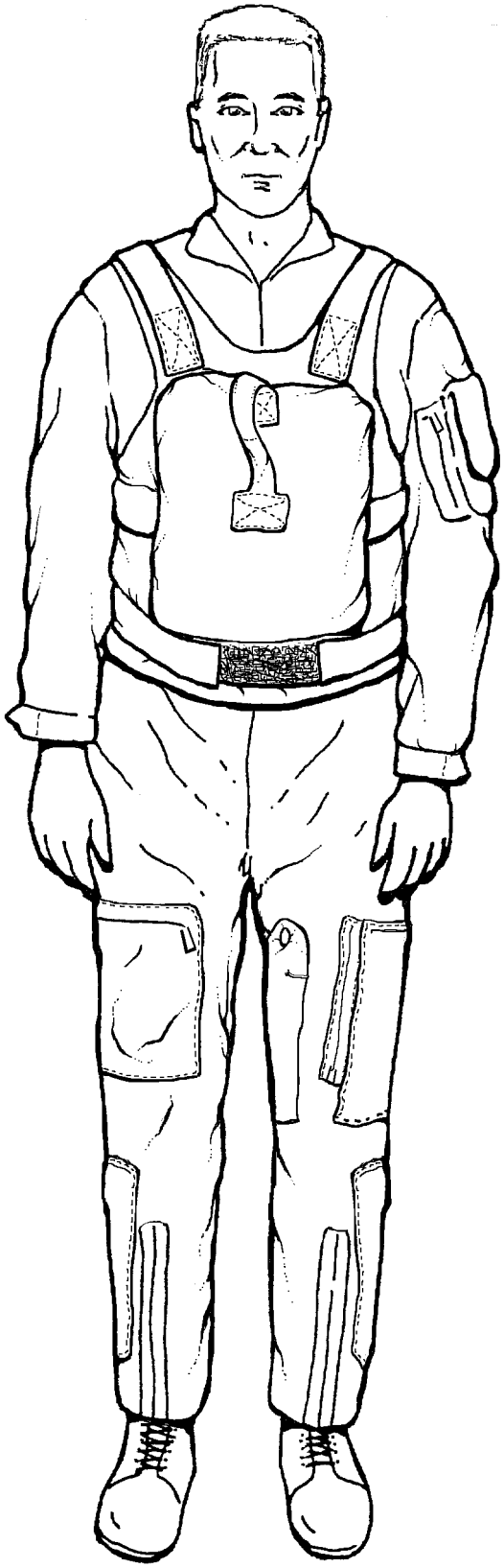
7-55. Soft ballistic insert assemblies are constructed of a multi-layered, ballistic, high-strength aramid cloth encased in a water-repellent nylon cover. Inserts are placed inside the casings. The soft ballistic insert assemblies provide wrap-around coverage and some fragmentation protection for the upper body. Casings are fitted to the aircrewmember shoulder and side straps with hook and pile tape. The casing assemblies for the side soft ballistic inserts fit to the front and back casing assemblies through a combination of hook and pile fasteners and snap fasteners.

1. If wearing only the front soft armor is desired, an H-harness is available. The H-harness is worn on the crewmember's back and the hook and pile on the H-harness straps attach to the respective hook and pile on the front soft armor.

2. The hard ballistic inserts are constructed of a ceramic, ballistic, composite material and a nylon spall shield. The nylon spall shield will effectively contain most projectile and ceramic spalling and provides a high degree of anti-fracturing capability. The front hard ballistic armor (figure 7-15) fits into a material lip on the front of the soft armor casing assembly and is secured with hook tape on the back of the encasement. The back hard ballistic armor (figure 7-16) has a quick-disconnect system of straps which attach to the front of the CMU-30/P22P-15 with a beaded pull-handle for ease of release. This system was designed for a one-hand, two-operation actuation for hard armor removal. The CMU-30/P22P-15 vest has two straps which fold over the bottom of the back hard armor, forming support and securing the hard armor by pressing the hook tape on the vest straps (figure 7-15) to the pile tape on the hard armor encasement (figure 7-16). The front and back hard armor encasements which cover the hard ballistic inserts, are designed to allow replacement or repair of the covers and their components.

Table 7-4. Major Components for Soft and Hard Armor Assemblies

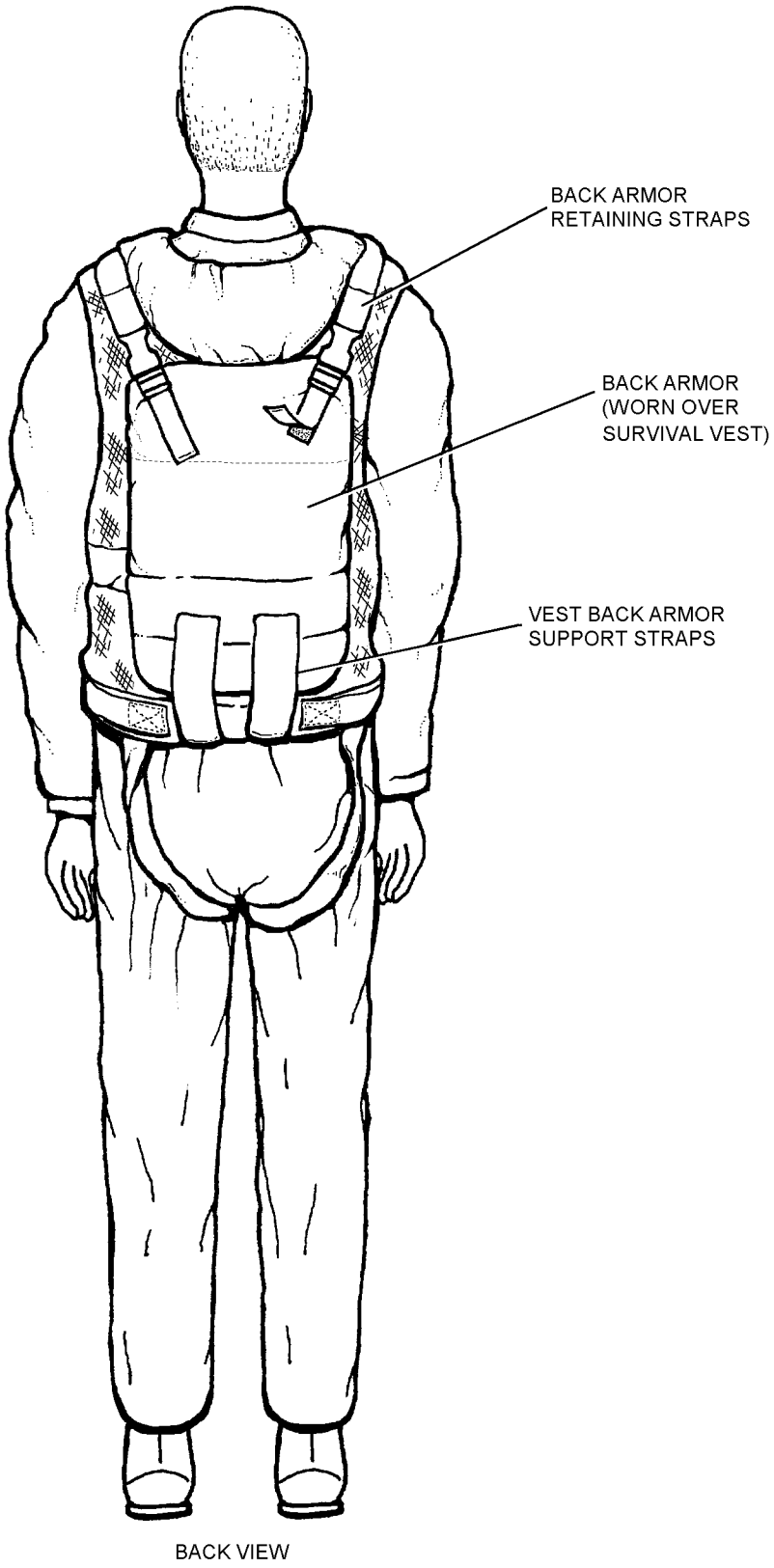
Nomenclature	Quantity	Size	Reference Number
Soft Small Arms Protective Body Armor (PRU-60/P22P-15)	1 1 1 1	Small Medium Large Extra Large	3241AS201-1 3241AS201-2 3241AS201-3 3241AS201-4
Casing Assembly, Front	1 1 1 1	Small Medium Large Extra Large	3241AS288-1 3241AS289-1 3241AS290-1 3241AS291-1
Casing Assembly, Side	1 1 1 1	Small Medium Large Extra Large	3241AS288-3 3241AS289-3 3241AS290-3 3241AS291-3
Casing Assembly, Back	1 1 1 1	Small Medium Large Extra Large	3241AS288-4 3241AS289-4 3241AS290-4 3241AS291-4
Soft Ballistic Insert Assembly, Front	1 1 1 1	Small Medium Large Extra Large	3241AS280-1 3241AS281-1 3241AS282-1 3241AS283-1
Soft Ballistic Insert Assembly, Side	1 1 1 1	Small Medium Large Extra Large	3241AS280-2 3241AS281-2 3241AS282-2 3241AS283-2
Soft Ballistic Insert Assembly, Back	1 1 1 1	Small Medium Large Extra Large	3241AS280-3 3241AS281-3 3241AS282-3 3241AS283-3
H-Harness	1	one size fits all	3241AS204
Hard Small Arms Protective Body Armor (PRU-61/P22P-15)	1 1 1 1	Small Medium Large Extra Large	3241AS401-1 3241AS401-2 3241AS401-3 3241AS401-4
Encasement Assembly, Front	1 1 1 1	Small Medium Large Extra Large	3241AS403-1 3241AS403-2 3241AS403-3 3241AS403-4
Hard Ballistic Insert, Front and Back	1 1 1 1	Small Medium Large Extra Large	3241AS402-1 3241AS402-2 3241AS402-3 3241AS402-4
Pull Handle Assembly (Beaded)	1	—	3241AS404-1
Quick Disconnect Strap Assembly	2	—	3241AS404-2
Back Armor Retaining Strap Assembly	2	—	3241AS404-3



FRONT VIEW

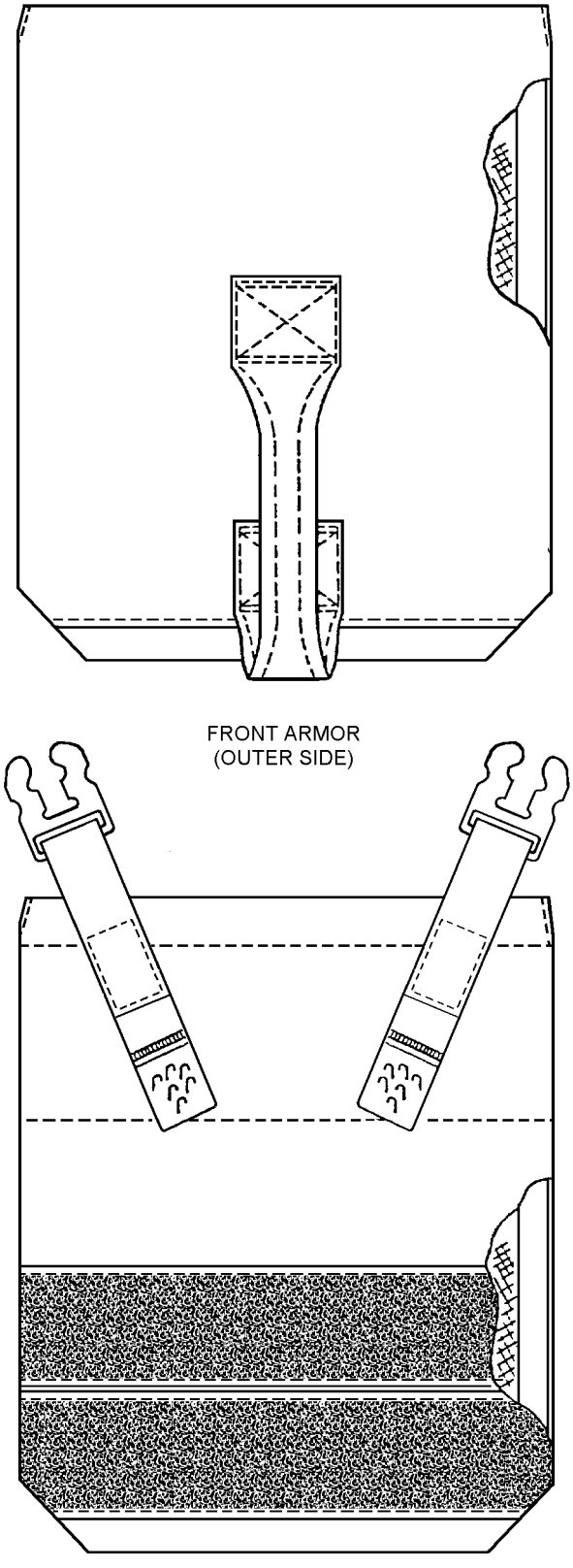
7-15-1

Figure 7-15. Soft and Hard Armor Assemblies (PRU-60/P22P-15 and PRU-61/P22P-15) (Sheet 1 of 2)



7-15-2

Figure 7-15. Soft and Hard Armor Assemblies (PRU-60/P22P-15 and PRU-61/P22P-15) (Sheet 2 of 2)



7-16

Figure 7-16. Hard Ballistic Armor Assemblies - Front and Back

7-56. APPLICATION.

7-57. The Helicopter Aircrew Survival and Armor Protective Assembly is designed specifically for use by helicopter aircrewmembers. When back and side-armored seats are available on helicopters operating in combat areas, pilots/copilots may wear only the front soft armor with a hard ballistic armor insert in front. Otherwise the full soft armor with both front and back hard armor is worn by the entire aircrew. Soft armor is available to helicopter aircrews operating outside direct combat areas.

7-58. APPLICABLE COMBINATIONS: (See table 7-5).

1. Front, back, and side soft ballistic insert assemblies with front and back hard ballistic armor inserts.

2. Front, back, and side soft ballistic insert assemblies with front hard armor only.

3. Front, back, and side soft ballistic insert assemblies and no hard armor.

4. Front and back soft ballistic insert assemblies with the front and back hard armor.

5. Front and side soft ballistic insert assemblies with the H-harness and the front hard armor.

6. Front and side soft ballistic insert assemblies with the H-harness and no hard armor.

7. Front and back soft ballistic insert assemblies and the front hard armor.

8. Front soft ballistic insert assembly with the H-harness and the front hard armor.

9. Front soft ballistic insert assembly with the H-harness and no hard armor.

NOTE

The local commander may specify which configuration aircrewmembers shall wear based upon the particular aircraft flown and type of mission.

Table 7-5. Applicable Combinations

	Front Soft Ballistic Insert Assy	Side Soft Ballistic Insert Assy	Back Soft Ballistic Insert Assy	H-Harness	Front Hard Armor Plate	Back Hard Armor Plate	Front Casing Assy	Side Casing Assy	Back Casing Assy
1	X	X	X		X	X	X	X	X
2	X	X	X		X		X	X	X
3	X	X	X				X	X	X
4	X		X		X	X	X		X
5	X	X		X	X		X	X	
6	X	X		X			X	X	
7	X		X		X		X		X
8	X			X	X		X		
9	X			X			X		

7-59. FITTING.

7-60. The body armor system assembly is fitted to the aircrewmember on a best-fit basis, with insert assemblies and plate(s) installed as applicable to the configuration desired. Armor sizes available for the aircrewmembers for soft and hard armor are indicated in table 7-6.

Table 7-6. Fitting Soft and Hard Armor Assemblies

Size	Chest (Inches)	Centimeters
Small	Up to 36	Up to 91
Medium	37 - 40	92 - 102
Large	41 - 44	103 - 112
X-Large	Over 44	Over 112

1. A properly fitted survival and armor protective assembly will allow for soft ballistic inserts to be located so they extend from the waist to the collar bone. The location of the flexible, side, soft ballistic inserts and hard ballistic armor inserts may subsequently be adjusted within the limits of the hook and pile attachments to provide optimum protection and proper fit.

NOTE

The body armor must fit snugly to the person to provide maximum effective protection and coverage of the torso.

2. The armor used in the survival and armor protective assembly will be sized to correspond with casing size. An aircrewmember requiring a small assembly will use small sizes of the soft ballistic inserts and hard armor plates. The back armor retaining strap may be adjusted to position the back hard ballistic armor properly.

3. Since there are only two sizes of vests (medium and large) and four sizes of body armor, table 7-7 lists compatible size combinations.

Table 7-7. Soft and Hard Body Armor Size Combinations

Vest	Soft Armor	Hard Armor
Medium	Small	Small
Medium	Medium	Medium
Large	Large	Large
Large	X-Large	X-Large

7-61. MAINTENANCE.

7-62. Maintenance of the Small Arms Protective Soft and Hard Body Armor, PRU-60/P22P-15 and PRU-61/P22P-15, respectively, shall consist of preflight, postflight, acceptance/special inspections, and minor repairs of the soft and hard armor casing and encasement assemblies. Minor repairs shall be limited to mending small rips and tears, restitching broken seams, and replacement of snap fasteners and hook and pile fastener tape. Repair actions shall be performed at lowest technically capable maintenance level. All maintenance actions and inspections shall be documented in accordance with OPNAVINST 4790.2 Series.

7-63. ACCEPTANCE/SPECIAL INSPECTION. The Acceptance/Special Inspection of the soft and hard small arms body armor assemblies shall be performed by organizational maintenance or above. Inspections shall be performed upon receipt from the manufacturer, prior to being placed in service. The special inspection shall include the following:

1. Verify that all components are present and complete.

2. Remove all soft inserts and/or hard inserts.

3. Inspect soft armor casings and/or the hard armor encasements for cuts, tears, and/or abrasions.

4. Inspect soft armor casings and hard armor encasement stitching for holes, tears, and/or loose seams.

5. Inspect soft armor casings and hard armor encasement hook and pile fasteners for secure attachment and closure.

6. Inspect all soft armor casings and hard armor encasement fasteners for damage, security, and ease of operation.

7. Inspect hard ballistic armor inserts for any evidence of dropping (i.e. dents or cracks) or any other mishandling.

8. Inspect soft ballistic insert assemblies for any rips or tears in the water repellent covers or damage to ballistic aramid cloth.

9. Document inspection in accordance with OPNAVINST 4790.2 Series.

7-64. CLEANING. Regular cleaning of the body armor assemblies will lengthen the life of the fabrics.

7-65. Soft Ballistic Inserts. Clean soft ballistic inserts as follows:

1. Remove soft ballistic insert assemblies from the casing assembly.

CAUTION

Do not soak soft ballistic insert assemblies or use bleach or starch.

2. Using a damp cloth, wipe the cover of the soft ballistic insert until clean.

CAUTION

Do not leave ballistic aramid cloth exposed to direct sunlight. Continuous exposure to ultraviolet rays for an extensive period of time will seriously deteriorate the soft armor.

3. Set to dry in open, well ventilated area.

7-66. Hard Ballistic Inserts. Clean hard ballistic armor inserts as follows:

1. Remove the hard ballistic armor inserts from their encasements.

2. Wipe clean with a damp cloth.

3. Dry with a cloth/paper towel or set to air dry.

7-67. Casing Assembly. Clean casing assembly as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Detergent, Laundry	Commercial

WARNING

Ensure all soft ballistic insert assemblies have been removed prior to washing the casing assembly. Although the soft ballistic insert assemblies are covered with water repellent nylon, water may seep through the stitching. Upon drying, high-strength aramid cloth recovers its original ballistic characteristics. However, water may be retained within the water-repellent cover if the insert is subjected to washing with the casing assembly. When wet, untreated aramid cloth could lose up to 40% of its ballistic capability thereby becoming a threat to the wearer's safety.

NOTE

Detergent shall be mixed in accordance with instructions on detergent container. Wash casing assembly only with other high temperature resistant, flame retardant materials (textile aramid flame retardant).

1. Fasten the hook and pile to prevent entangling with other articles.

WARNING

JP-5 fuel, grease or other combustibles embedded in casing assembly fabric will burn at their normal flash points even though the aramid cloth will not burn until a higher temperature is reached. Be sure the casing assembly is thoroughly clean and free of combustibles prior to further use. Dry clean or machine wash as necessary.

2. Immerse casing assembly in a proper mixture of a commercial laundry detergent and luke-warm water.

NOTE

Heavily soiled and/or stained casing assemblies may require high-temperature water for best cleaning. Casing assemblies that are heavily soiled and/or stained with oil or grease may be pre-treated with a commercial pre-wash detergent.

a. Allow casing assembly to soak for five minutes. Agitate gently (by hand) for two minutes and drain water.

3. Rinse casing assembly in cool, fresh water and drain the water. Repeat rinsing until all traces of detergent have disappeared from the rinse water.

CAUTION

Do not dry casing assembly in direct sunlight.

4. Hang casing assembly on a wooden or plastic hanger in a dry, well-ventilated area away from heat and any open flame.

5. Remove loose dirt from hook and pile fastener and outer cover surface using a cloth or soft brush. Do not use a stiff bristle brush.

7-68. CORRECTIVE MAINTENANCE. Corrective maintenance of the soft and hard body armor assemblies and hard armor plate encasement assemblies shall be limited to the general maintenance instructions discussed in paragraph 7-61. No maintenance is authorized on the hard armor plates. If the hard armor plates are dropped or receive other abnormal treatment, or a defect is suspected, they shall be inspected by a nondestructive method at I-level. The I-level inspection will determine if the plates are to be discarded, returned to the manufacturer for further inspection, or reissued. The soft ballistic inserts must be replaced if their ballistic aramid cloth is damaged. If damage is found such as tears in the ballistic aramid cloth, badly worn areas in which the thread used to sew layers together is damaged, or evidence that the fabric is unravelling, the ballistic insert shall be replaced. Small rips or tears in the water-repellent black covers of the soft ballistic insert assemblies may be repaired using any water repellent tape compatible with nylon under the following conditions:

1. No damage to the ballistic aramid cloth is found.

2. There is no moisture inside the insert (the ballistic aramid cloth).

3. The repair material is also water-repellent.

4. After repair, the insert cover remains water-repellent.

CAUTION

The hard body armor is made of fragile ceramic material and must be handled carefully. The hard armor plates should be inspected before each operational use to ensure there are no surface cracks which might degrade ballistic protection. Hard armor plate must be replaced if it is cracked, has been hit, or received rough treatment in any way which may cause damage. For example, if an unprotected hard armor plate hits a hard surface at the speed of 12 feet/second (i.e. a drop from a height equal to one yard onto a tile floor) the armor should be sent to I-level for further inspection by an authorized representative, even if there is no visible damage to the exterior of the plates.

NOTE

The ballistic nylon spall shield which covers the ceramic plates could conceal interior damage to the ceramic material of the hard armor.

Hard armor may be reissued if it is determined to be acceptable by I-level after radiographic inspection in accordance with MIL-STD-453 by an operator qualified in accordance with MIL-R-11470.

7-69. REPAIR AND REPLACEMENT.

7-70. CASING ASSEMBLY, SOFT AND HARD ARMOR. Repairs on casing assemblies shall be performed at the lowest technically capable maintenance level, using an industrial/medium-duty sewing machine and high temperature-resistant nylon thread. Repairs shall be limited to mending small rips and tears, restitching loose seams, and replacing fastening devices.

7-71. Hook and Pile Fastener Tapes. Replace hook and pile fastener tapes as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Fastener, Tape, Hook, Type II, Class 1, Olive Green, 1-Inch and 2-Inch	MIL-F-21840 NIIN 00-106-5973 NIIN 00-450-9837
As Required	Fastener, Tape, Pile, Type II, Class 1, Olive Green, 1-Inch and 2-Inch	MIL-F-21840 NIIN 00-106-5974 NIIN 00-926-4930
As Required	Thread, Nylon, Size E, Olive Green	V-T-295 NIIN 00-244-0609

1. Carefully cut stitching and remove damaged fastener tape.

2. Cut new fastener tape the same length as the damaged fastener tape removed.

3. Position fastener tape in same location as fastener tape removed. Single row stitch 1/8 inch from edge on all four sides.

7-72. Snap Fasteners. Replace defective snap fasteners as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Fastener, Snap, Button, Omni-directional	MS27980-1B NIIN 00-359-6844
As Required	Fastener, Snap, Socket, Omni-directional	MS27980-6B NIIN 00-285-6250
As Required	Fastener, Snap, Stud, Omni-directional	MS27980-7B NIIN 00-842-1879
	-or-	
As Required	Fastener, Snap, Eyelet, Omni-directional	MS27980-8B NIIN 01-023-3843
1	DOT Snapmaster	89-M840 (CAGE 13940)
1	Punch and Die Set for Omni-directional Snap Fastener	(4303, 4403) (CAGE 13940)

NOTE

When replacing a defective snap fastener, both sides (stud or socket and eyelet or button) must be replaced.

1. Using end cutters, remove damaged snap fastener stud or socket from mating eyelet or button.

2. Install new fasteners using DOT Snapmaster and punch (4303) and die (4403) set.

7-73. Elastic Cotton Webbing. Repair/replace side casing adjustment straps on back section soft armor casing assembly as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Webbing, Cotton, Elastic, Olive Green, 2-Inch	MIL-W-5664 NIIN TBD
3 Inches	Fastener, Tape, Hook, 2-Inch, Olive Green	MIL-F-21840 NIIN 01-086-9635
As Required	Thread, Nylon, Size E, Olive Green	V-T-295 NIIN 00-244-0609

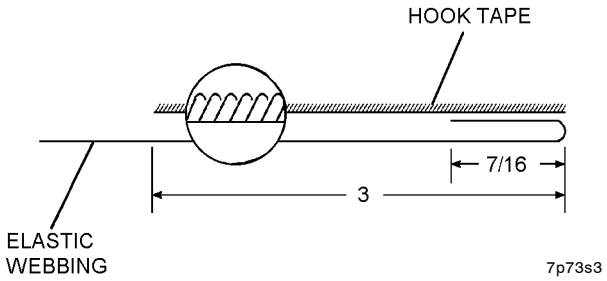
NOTE

All stitching shall be in accordance with ASTM-D-6193, Type 301 lockstitch, 7 to 10 stitches per inch with minimum 1/2-inch backstitch.

1. Remove damaged strap from casing assembly, using care not to damage the casing assembly.

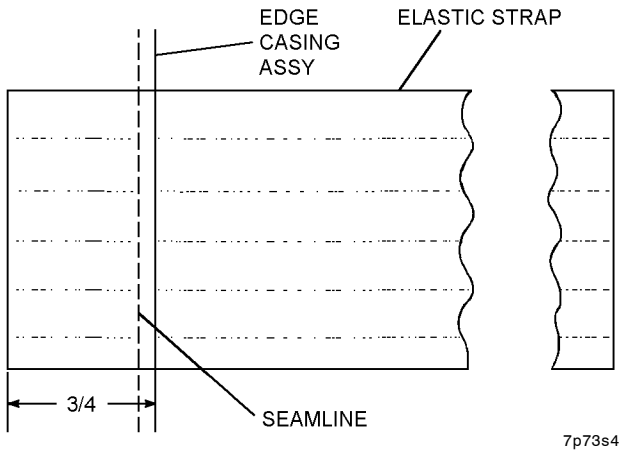
2. Cut new straps, same length as straps removed, from 2-inch MIL-W-5664 cotton elastic webbing.

3. Fold end of cotton elastic webbing back 7/16 inch, place 3-inch section of hook tape over the fold-back webbing. Stitch hook tape to the cotton elastic webbing using size E nylon thread.



Step 3 - Para 7-73

4. Insert cotton elastic webbing back in casing assembly 3/4 inch and restitch seamline on casing assembly.



Step 4 - Para 7-73

7-74. Nylon Webbing Shoulder Straps. Replace/repair shoulder straps as follows:

Materials Required

Quantity	Description	Reference Number
15 Inches	Webbing, Nylon, Olive Green, Type XII, 1 23/32-Inch	MIL-W-4088 NIIN 00-281-3012
As Required	Thread, Nylon, Type II, Size E, Olive Green	V-T-295 NIIN 00-244-0609
3 1/2 Inches	Fastener, Tape, Pile, 2-Inch, Sage Green	MIL-F-21840 NIIN 00-405-2265

1. Mark casing assembly where existing damaged shoulder strap is located.

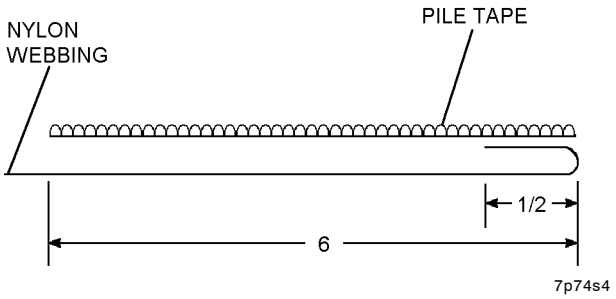
2. Cut stitching and remove damaged strap from casing assembly, using care not to damage the casing assembly.

3. Trim pile tape width from 2 inches down to 1 23/32 inch.

NOTE

All stitching shall be in accordance with ASTM-D-6193, Type 301 lockstitch, 7 to 10 stitches per inch with minimum 1/2-inch backstitch.

4. Fold one end of nylon webbing over 1/2 inch, place 6-inch section of pile tape on the overlapping section. Stitch pile tape to the nylon webbing using size E nylon thread.



Step 4 - Para 7-74

NOTE

Remove soft ballistic insert from back casing assembly before attaching shoulder strap.

The back casing assembly is formed by two sections of textile aramid cloth between which is the soft ballistic insert. The shoulder strap is to be stitched only to the outer of the two sections.

5. Place nylon webbing at markings where the damaged shoulder strap was removed. Ensure the side facing the casing assembly is also the side with the pile tape, located at the opposite end. Crossbox stitch nylon webbing in place.

7-75. FABRICATION/REPAIR OF H-HARNESS (figure 7-17). The H-harness is fabricated as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Webbing, 1 23/32-Inch, Type VII, Class 1, Sage Green	MIL-W-4088 NIIN 00-261-8585
As Required	Fastener Tape, Pile, 2-Inch, Type II, Class 1, Sage Green	MIL-F-21840 NIIN 00-405-2265
As Required	Fastener Tape, Hook, 2-Inch, Type II, Class 1, Sage Green	MIL-F-21840 NIIN 00-450-9837
As Required	Thread, Nylon, Size E, Type II, Class 1, Sage Green	V-T-295 NIIN 00-204-3884

1. Sear cut two 29 3/8-inch length and two 37-inch lengths of MIL-W-4088 webbing.

2. Fold under 1/2 inch at one end of each 29 3/8-inch length of webbing and double stitch in place.

3. In opposite end of each 29 3/8-inch length fold under 3/8 inch and double stitch in place.

NOTE

Each length is now 28 1/2 inches long.

4. Fold under 1/2 inch at each end of each 37-inch length and double stitch using 301 stitch, 8 to 10 stitches per inch, 1/8 inch from edges.

NOTE

Each length is now 36 inches long.

5. Sear cut two 3-inch lengths of pile fastener tape and trim width of each to 1 3/4 inches. Sew one 3-inch length of pile tape, pile side up, 1/4 inch from the end of each 28 1/2-inch webbing on the side which was folded under 1/2 inch. Use single stitch lengthwise and double stitch at ends using 301 stitch, 8 to 10 stitches per inch, 1/8 inch from edge of pile tape.

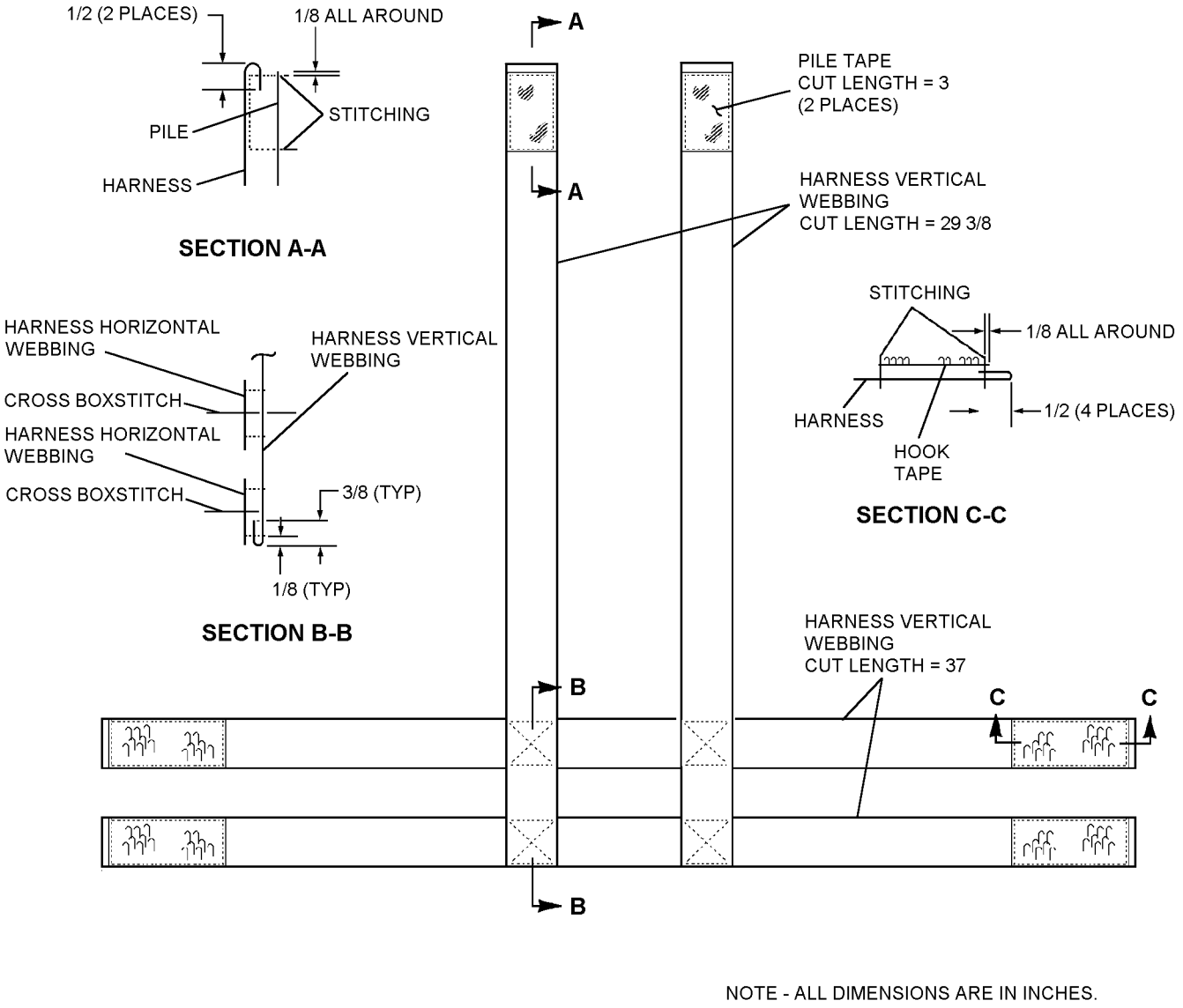
6. Sear cut four 3-inch lengths of hook tape and trim width of each to 1 3/4 inches.

7. Sew one 3-inch strip of hook tape 1/4 inch from each end of the two 36-inch lengths of webbing, hook side up, on the side of the webbing turned under in step 4 above. Use same stitching procedures used in step 5 above.

8. Lay the two 36-inch lengths horizontally on table parallel to each other, 1 3/4 inches apart with hook side down.

9. Lay the two 28 1/2-inch lengths, pile side down, vertically across the 36-inch horizontal lengths, positioned 13 3/4 inches from each end of the horizontal lengths and 4 1/2 inches from each other. The free end of each 28 1/2-inch length shall be flush with the lower edge of the near horizontal length of webbing (see figure 7-17).

10. Crossbox stitch the four sections of webbing together as shown in figure 7-17.



NOTE - ALL DIMENSIONS ARE IN INCHES.

7-17

Figure 7-17. H-Harness Assembly

7-76. FABRICATION/REPAIR OF ARMOR BEADED PULL HANDLE (figure 7-18). Fabricate/repair armor beaded pull handle/quick-release assembly as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Nylon, Type IV, Sage Green, 1-Inch	MIL-T-5038 NIIN 00-261-8579
As Required	Webbing, Type XV, 2-Inch	MIL-W-4088 NIIN 00-082-2142
1	Handle, Bead	975AS122-1 (CAGE 62323)
6	Fastener, Snap, Button, Omni-directional	MS27980-1B NIIN 00-359-6844
6	Fastener, Snap, Socket, Omni-directional	MS27980-6B NIIN 00-285-6250
2	Fastener, Snap, Stud, Omni-directional	MS27983-3 NIIN 00-276-4908
2	Fastener, Snap, Eyelet, Omni-directional	MS27983-4 NIIN 00-276-4978
As Required	Thread, Nylon, Size E, Sage Green	V-T-295 NIIN 00-204-3884
1	DOT Snapmaster	89-M840 (CAGE 13940)
1	Punch and Die Set, Omni-directional	4403, 4403, 4304, 4404 (CAGE 13940)
1	Punch and Die Set, Uni-directional	4305, 4305, 4304, 4404 (CAGE 13940)

1. Fabricate/repair beaded armor pull handle:

a. Sear cut one 9 1/2-inch length and one 5 5/8-inch length of MIL-T-5038 1-inch tape.

b. Sear cut one 21-inch length of MIL-W-4088 2-inch webbing.

c. Remove beads from pull handle under repair or use 6 beads from stock.

2. Fold 21-inch length of webbing in half to form 10 1/2-inch length. Stitch perimeter 1/16 inch from edge using size E thread.

3. Place 5 5/8-inch length of tape vertical on flat surface.

a. Make a 1 3/8-inch fold from top down toward center and make 1 3/8-inch fold from bottom up toward center so ends meet. The folded tape should now be approximately 2 3/4 inches long (see figure 7-18).

b. Stitch perimeter of folded tape 1/16 inch from edge using size E thread.

c. Place 9 1/2-inch length of tape perpendicular to and centered on top of 2 3/4-inch tape completed in step 3b above. The right edge of the 2 3/4-inch tape shall be one inch from right end of 9 1/2 inch tape (see figure 7-18).

d. Sew 9 1/2-inch tape onto 2 3/4-inch tape using 3/4 X 3/4-inch crossbox stitch and size E thread.

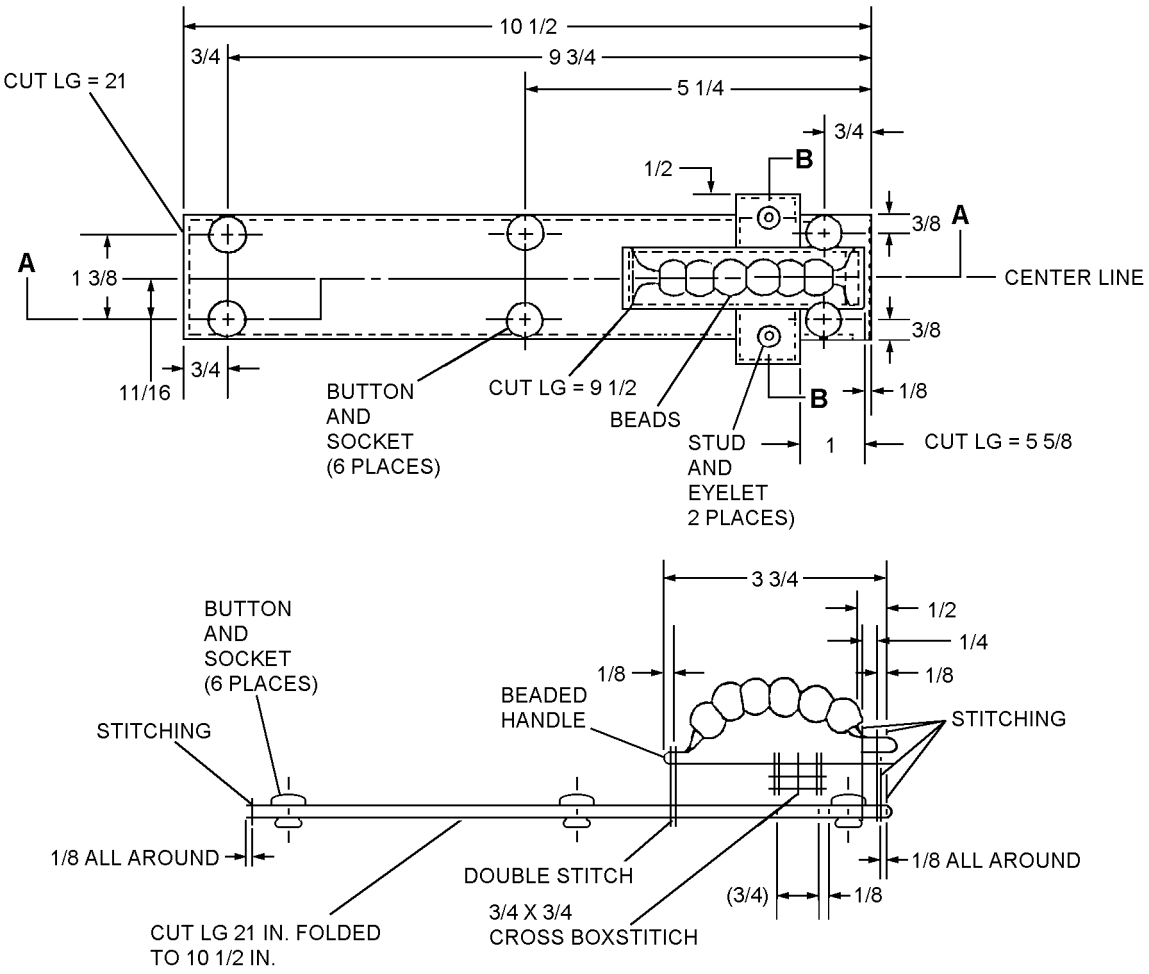
4. Place 10 1/2-inch length of 2-inch webbing in horizontal position on flat surface. Measure and mark horizontal center line.

a. Measure and mark 1 1/8-inch from right end of webbing center line.

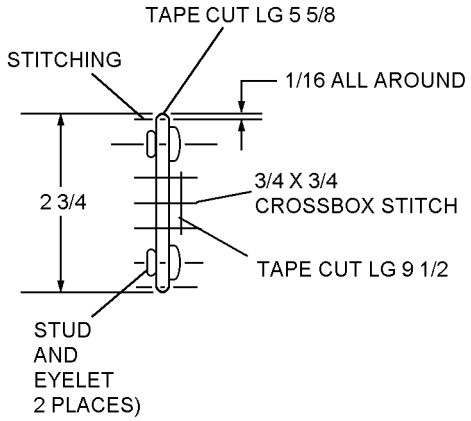
b. Position 9 1/2-inch assembly from step 3d on center line with right edge of 2 3/4-inch tape centered at 1 1/8-inch mark on center line. This will place the right end of 9 1/2-inch tape 1/8 inch from right end of 10 1/2-inch webbing centered on center line of webbing (see figure 7-18); single stitch end of tape in place using size E thread.

c. Extend 9 1/2-inch tape to left along center line of webbing and measure and mark tape 3 3/4 inches from right end. Fold tape back at 3 3/4-inch mark toward right, ensure center of tape width is on center line of webbing and double stitch tape to webbing 1/8 inch from fold line using size E thread.

d. Fold end of tape under 1/2 inch, lay flush with sewn end of tape, and box stitch 5/16 X 3/4 inch staying 1/16 inch from edges.



SECTION A-A



SECTION B-B

NOTE - ALL DIMENSIONS ARE IN INCHES.

7-18

Figure 7-18. Armor Beaded Pull Handle

5. Install/replace snap fasteners (figure 7-18).

a. Position beaded armor pull handle assembly horizontally on flat surface with beaded handle up and to the right.

b. Measure and mark a line 3/8 inch from top and bottom edges across horizontal length of the handle assembly webbing.

c. Starting at right end of each horizontal line drawn in step 5b, measure and mark positions at 3/4 inch, 5 1/4 inches, and 9 3/4 inches.

d. Center punch a hole through the webbing at each of the six positions marked in step 5c. Using DOT Snapmaster and omnidirectional punch and die, install female snap fastener buttons (MS27980-1B) and sockets (MS27980-6B) facing down (buttons on top) at each position.

e. Locate 2 3/4-inch tape secured perpendicular to beaded handle. Measure and mark on center line 1/2 inch from each end.

f. Center punch a hole through tape at both positions marked in step 5e. Using DOT Snapmaster and omnidirectional punch and die, install snap fastener stud (MS27983-3) and eyelet (MS27983-4) facing up (eyelet on top) in both positions.

7-77. FABRICATION/REPAIR OF QUICK DISCONNECT STRAP ASSEMBLY (figure 7-19).

Fabricate/repair quick disconnect strap assembly as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Nylon, Type IV, 1-Inch, Sage Green	MIL-T-5038 NIIN 00-261-8579
As Required	Tape, Nylon, Type III, 3/4-Inch, Sage Green	MIL-T-5038 NIIN 00-176-8083
As Required	Thread, Nylon, Size E, Type II, Class 1, Sage Green	V-T-295 NIIN 00-204-3884

Materials Required (Cont)

Quantity	Description	Reference Number
1	Fastener, Snap, Button, Omni-directional	MS27980-1B NIIN 00-359-6844
1	Fastener, Snap, Socket, Omni-directional	MS27980-6B NIIN 00-285-6250
4	Fastener, Snap, Button, Uni-directional	MS27983-1 NIIN 00-891-9073
4	Fastener, Snap, Socket, Uni-directional	MS27983-2 NIIN 00-893-6243
1	QR Strap Clip, Black, 3/4-Inch	627-0075 (CAGE 82399)
1	DOT Snapmaster	89-M840 (CAGE 13940)
1	Punch and Die Set, Omni-directional	4403, 4403 4304, 4404 (CAGE 13940)
1	Punch and Die Set, Unidirectional	4305, 4405 4304, 4404 (CAGE 13940)

1. Sear cut two 43 1/2-inch lengths of MIL-T-5038 3/4-inch tape.

a. Insert end of one tape through QR strap clip. Fold tape double and move clip to folded end.

b. Ensure tape is folded double, ends meet equally, and stitch entire perimeter of tape using size E thread staying 1/8 inch from edges and 1/2 inch from clip.

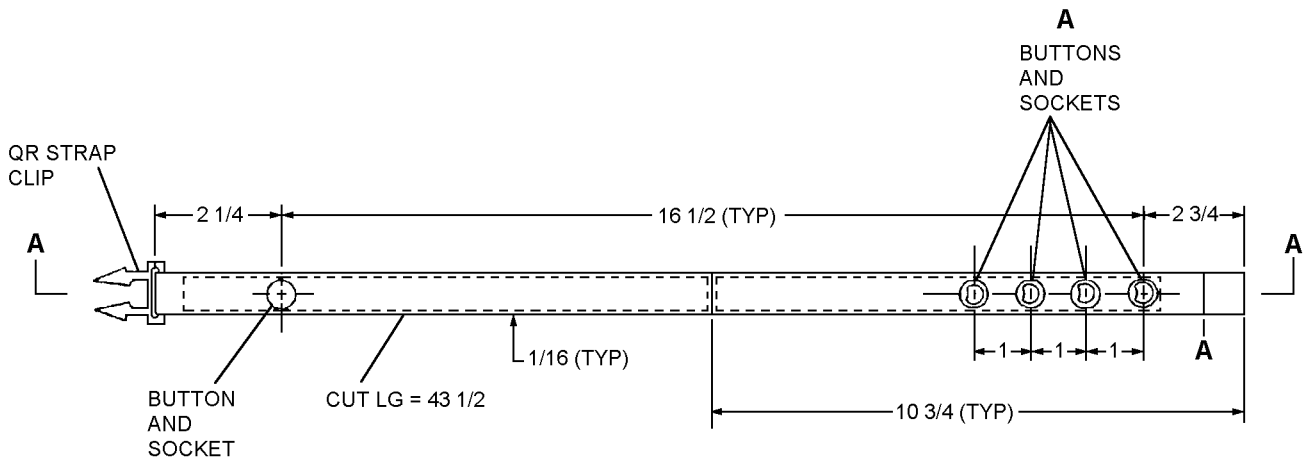
NOTE

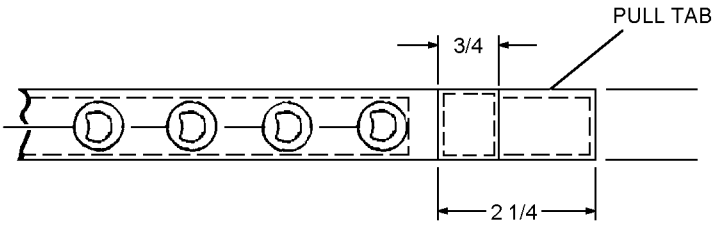
Ensure dimensions of sewn tape meet minimum dimensions shown in figure 7-19.

2. Position tape horizontally on flat surface with strap clip on left.

a. Measure and mark position on center line 2 1/4 inches from left end of tape and center punch a hole through the tape at the mark.

b. Using DOT Snapmaster and unidirectional punch and die set, install snap fastener button (MS27980-1B) and socket (MS27980-6B) with button on top.





DETAIL A
DETAIL B

SECTION A-A

NOTE - ALL DIMENSIONS ARE IN INCHES.

7-19

Figure 7-19. Quick Disconnect Strap

3. Position tape horizontally on flat surface with strap clip on left and socket installed in step 2b facing up.

a. Measure and mark position on center line 2 3/4 inches from right end of tape. Measuring from this position, measure and mark three more positions at one inch intervals along the center line for a total of four positions. Center punch a hole through the tape at each of the four marked positions.

b. Using DOT Snapmaster and unidirectional punch and die set, install snap fastener buttons (MS27983-1) and sockets (MS27983-2) in each position. Each button shall be installed on top with directional dot pointing to the right.

NOTE

Each of the four buttons shall be on opposite side of tape from button installed in step 2b.

4. To fabricate pull tab, sear cut a 5-inch length of MIL-T-5038 1-inch tape.

a. Fold tape in half and sew ends together using size E thread.

NOTE

Do not sew tape halves together. Sew only ends together.

b. Overlap the right end of quick disconnect strap assembly 3/4 inch on stitched end of tape sewn in step 4a and box stitch using size E thread.

5. Repeat procedures in steps 1 through 4b for second quick disconnect strap.

7-78. FABRICATION/REPAIR OF BACK HARD ARMOR RETAINING STRAP (figure 7-20). Fabricate/repair back hard armor retaining strap as follows:

Materials Required

Quantity	Description	Reference Number
As Required	Tape, Nylon, Type IV, 1-Inch, Sage Green	MIL-T-5038 NIIN 00-261-8579
As Required	Thread, Nylon, Size E, Sage Green	V-T-295 NIIN 00-204-3884

Materials Required (Cont)

Quantity	Description	Reference Number
1	Buckle 1-Inch, Black	MS51940-9S NIIN 00-878-8827
1	Fastener, Snap, Eyelet, Omni-directional	MS27980-8B NIIN 01-023-3843
1	Fastener, Snap, Stud, Omni-directional	MS27980-7B NIIN 00-842-1879
1	Buckle, Side Release, 1-Inch, Black (Female)	101-0100 (CAGE 82399)
1	DOT Snapmaster	89-M840 (CAGE 13940)
1	Punch and Die Set, Omni-directional	4403, 4404, 4304 (CAGE 13940)

1. Sear cut two 9 3/4-inch lengths of MIL-T-5038 1-inch tape.

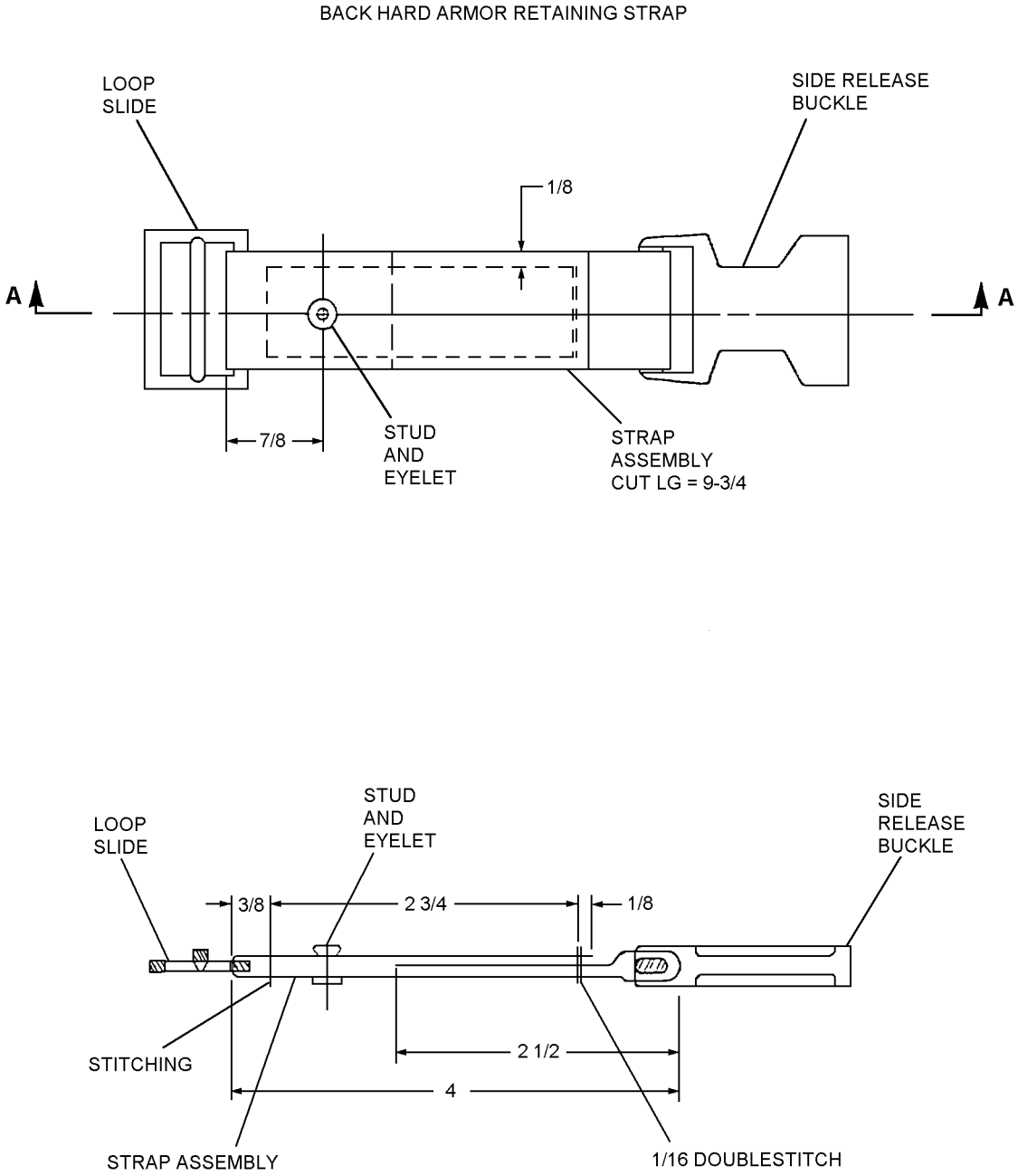
a. Insert end of one tape through side release buckle, fold tape back 2 1/2 inches, and single stitch two tape layers together 1/2 inch from buckle

b. Insert opposite end of tape through slide loop, fold back 3 1/4 inches, overlapping fold made in step 1a, and box stitch three tape layers together using size E thread staying 1/8 inch from edges of top layer tape and 3/8 inch from fold at slide loop end.

c. Lay strap assembly on flat surface with slide loop at left and folded side up. Measure and mark position on center line of tape 7/8 inch from fold at slide loop and center punch hole through strap assembly.

d. Install omnidirectional stud (MS27980-7B) and eyelet (MS27980-8B), with eyelet on bottom, using DOT Snapmaster and punch and die equipment.

e. Repeat steps 1a through 1d for second strap assembly.



7-20

Figure 7-20. Back Hard Armor Retaining Strap

7-79. STORAGE. The shelf life of the soft ballistic inserts and accompanying casing assembly will depend upon storage procedures and conditions. The soft ballistic inserts should be stored to prevent excessive exposure to ultraviolet rays. Such exposure will degrade the Helicopter Aircrew Survival and Armor Protective Assembly's protective capability. Service life is programmed for ten years, depending on the amount of usage and handling.

7-80. When properly stored and handled, the hard armor has an indeterminate life span. The hard armor should be carefully examined for cracks and/or dents prior to and after storage (see paragraph 7-68). Inspection results will determine whether armor is to be retained or replaced.

7-81. Ensure all stored PRU-61/P22P-15 or PRU-61A/P22P-15 small arms protective hard body armor units contain attaching assembly parts as follows: hard ballistic armor assemblies (front and back), armor beaded pull handle (1), quick disconnect straps (2) and back hard armor retaining straps (2).